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RESEARCH MEMORANDUM

EFFECT OF A WING LEADING-EDGE FLAP AND CHORD-EXTENSION ON THE HIGH SUBSONIC CONTROL CHARACTERISTICS OF A SPOILER-SLOT-DEFLECTOR CONTROL LOCATED AT TWO SPANWISE POSITIONS

By Robert F. Thompson and Robert T. Taylor

Langley Aeronautical Laboratory
Langley Field, Va.

CLASSIFIED DOCUMENT

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NATIONAL ADVISORY COMMITTEE
FOR AERONAUTICS
WASHINGTON
November 19, 1954

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NACA RM L54I09 [redacted]

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RESEARCH MEMORANDUM

EFFECT OF A WING LEADING-EDGE FLAP AND CHORD-EXTENSION ON THE HIGH SUBSONIC CONTROL CHARACTERISTICS OF A SPOILER-SLOT-DEFLECTOR CONTROL LOCATED AT TWO SPANWISE POSITIONS

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SUMMARY

An investigation was made in the Langley high-speed 7- by 10-foot tunnel to determine the effects of a wing leading-edge modification on the effectiveness of a spoiler-slot-deflector control. The control was tested on one semispan of a sting-mounted wing-fuselage model having a wing of aspect ratio 4, taper ratio 0.3, 45° sweepback, and NACA 65A006 airfoil sections. The wing leading-edge modification was the optimum configuration from a previous investigation and consisted of a chord-extension over the outboard 35 percent of the semispan in combination with a full-span leading-edge flap deflected 6°. The spoiler-slot-deflector control having equal spoiler and deflector projection was also chosen on the basis of a previous investigation. The control spanned 44 percent of wing semispan and was tested at two spanwise locations. A few comparative tests were made with the spoiler part of the control used as an unvented flap-type spoiler. Control projections up to 10 percent of the local wing chord were tested through an angle-of-attack range which varied with Mach number and a Mach number range from 0.40 to 0.94. Complete results are presented in tabular form as increments in aerodynamic coefficients due to control projection. A representative part of the data is presented graphically, and results are discussed on the basis of these data.

Modifying the wing leading edge generally had a beneficial effect on the static lateral control characteristics. On both the plain and modified wing, the spoiler-slot-deflector control was effective in producing rolling-moment coefficients over a greater angle-of-attack range than the plain flap-type spoiler and, in general, both types of controls were more effective when located at the inboard spanwise position. Except

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for pitching moment, the increment in aerodynamic coefficient varied fairly regularly with control projection and the general shape of the curves was little affected by wing leading-edge modification.

INTRODUCTION

Detailed wind-tunnel investigations have shown that, for certain thin sweptback wings, leading-edge separation combines with a spanwise pressure gradient to create a vortex-type flow over most of the lift range. This flow can result in undesirable static longitudinal stability characteristics for certain aspect ratios and can lead to the objectionable characteristic termed "pitch-up" found in many current airplane designs having thin sweptback wings. A detailed discussion of this flow phenomenon is given in reference 1. Outboard leading-edge chord-extensions have been effective in improving the longitudinal-stability characteristics of wings of this type (ref. 2). In addition, appreciable improvement in the lift-drag ratio for thin sweptback wings up to Mach number of 0.90 was obtained with a deflected leading-edge flap (refs. 3 and 4). The investigation of reference 5, therefore, was made to determine to what extent these gains in longitudinal stability and lift-drag ratio could be combined at high subsonic speeds. For the model investigated, a leading-edge chord-extension over the outboard 35 percent of the semispan in combination with a full-span leading-edge flap deflected 6° gave best results from overall considerations of stability and performance. The purpose of the present investigation was to determine the effect of this wing leading-edge modification on the control characteristics of a spoiler control.

The control tested was chosen on the basis of the investigation made in reference 6. Results of reference 6 indicated that for speeds up to a Mach number of 0.91, a flap-type spoiler-slot-deflector control was effective in producing rolling moments over a greater angle-of-attack range than an unvented spoiler alone. Since flap-type spoilers are desirable on thin wings from a physical standpoint, the present investigation was made primarily with this flap-type spoiler-slot-deflector control. A few comparative tests were made with the spoiler part of the control used as a plain flap-type spoiler.

The present investigation was made on the wing-fuselage model used in reference 5 to determine the effects of the optimum wing leading-edge modification obtained in reference 5 on the control characteristics of a flap-type spoiler-slot-deflector control located at two spanwise positions. The wing had an aspect ratio of 4, a taper ratio of 0.3, 45° of sweepback of the quarter-chord line, and streamwise NACA 65A006 airfoil sections. Tests were made in the Langley high-speed 7- by 10-foot tunnel through a Mach number range from 0.40 to 0.94 and an angle-of-attack range from -2°

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to 24° at the lower speeds and -2° to 10° at a Mach number of 0.94. Complete incremental force and moment coefficients due to control projection are listed in tabular form and a representative part of the data is presented graphically.

SYMBOLS

The forces and moments measured on the model are presented about the wind axes which, for the conditions of these tests (zero yaw), correspond to the stability axes. The origin of the axes was in the plane of symmetry at a longitudinal position corresponding to the projection of the quarter-chord point of the wing mean aerodynamic chord (fig. 1).

All force and moment coefficients presented are based on the plan form of the basic wing without chord-extensions. The area of the chord-extensions was 3.8 percent of the basic wing area. Incremental effects due to control projection were produced by a control on only the right semispan of the complete wing.

C_L lift coefficient, Lift/qS

C_D drag coefficient, Drag/qS

C_m pitching-moment coefficient, Pitching moment/$qS\bar{c}$

C_l rolling-moment coefficient, Rolling moment/qSb

C_n yawing-moment coefficient, Yawing moment/qSb

C_Y lateral-force coefficient, Lateral force/qS (positive to right)

Δ prefix signifying increment of coefficient due to control projection

q free-stream dynamic pressure, $\frac{1}{2}\rho V^2$, lb/sq ft

S wing area before leading-edge modification, 2.25 sq ft

b wing span, 3 ft

$\bar{c}$ mean aerodynamic chord of basic wing, 0.823 ft

c local wing chord of basic wing, ft

h local maximum height of control above wing surface, ft

R Reynolds number based on $\bar{c}$

M free-stream Mach number

V free-stream velocity, ft/sec

ρ mass density of air, slugs/cu ft

y_i spanwise location of inboard end of control, measured perpendicular to plane of symmetry, ft

δ control projection, h/c

α angle of attack of fuselage center line and wing-chord line, deg

Subscripts:

s spoiler, part of control deflected from upper surface

d deflector, part of control deflected from lower surface

avg average

MODEL AND APPARATUS

A drawing of the wing-fuselage model is given in figure 1 and a photograph of the model mounted in the tunnel is shown as figure 2. Ordinates of the fuselage are given in table 1.

The wing had 45° of sweepback referred to the quarter-chord line, an aspect ratio of 4, a taper ratio of 0.3, and NACA 65A006 airfoil sections parallel to the plane of symmetry. The wing was made of solid aluminum alloy and the stiffness was reduced in providing for the leading-edge flap and the slot for the control.

Provision for the wing leading-edge modification was made by cutting the wing along the 20-percent-chord line, and leading-edge flap angles of 0° and 6° were obtained with preset steel inserts. After setting a desired flap angle, the groove in the wing was filled and finished flush to the wing surface. The chord-extension was made by using a larger insert to extend the nose section forward $0.10\bar{c}$. The two segments of the airfoil (nose and trailing-edge sections) were joined by a smooth fairing. Angular distortion of the flap and chord-extension under load was checked analytically and found to be negligible.

The spoiler-slot-deflector control consisted of the following: a flap-type spoiler with the hinge line along the upper-surface 55-percent-chord line and extending 15 percent of the wing chord rearward, a flap-type deflector with the hinge line along the lower-surface 70-percent-chord line and extending 15 percent of the wing chord forward, and a chordwise opening (slot) between the two hinge lines equal to the spoiler and deflector in span except for a narrow stiffening web at the midpoint of the control. For the plain flap-type spoiler, the deflector was set at zero projection and effectively sealed the slot through the wing. The controls spanned 44 percent of the wing semispan and were tested on the right wing at spanwise stations of $\frac{y_i}{b/2} = 0.25$ and 0.47. Control projection was obtained with interchangeable plates preset to the desired spoiler or deflector projection. At zero projection, the spoiler and deflector maintained the original airfoil contour. The leading edge of the deflector was sharpened to facilitate flow through the control slot at low projections. Spoiler projection was approximately equal to deflector projection for all tests with the spoiler-slot-deflector control.

CORRECTIONS

Blockage corrections were determined by the method of reference 7 and were applied to the Mach numbers and dynamic pressures. Jet-boundary corrections, applied to the angle of attack and drag, were calculated by the method of reference 8. The angle of attack has been corrected for deflection of the sting support system under load. The basic model data (fig. 4) were obtained from reference 5 and therefore have the corrections of reference 5 applied.

Control projections were measured in the wind-off condition and were believed to be little affected by aerodynamic load.

TESTS

The sting-supported wing-fuselage model was tested in the Langley high-speed 7- by 10-foot tunnel. Data were obtained for each model configuration by setting the tunnel Mach number and then rotating the model through an angle-of-attack range. Tests were made through a Mach number range from 0.40 to 0.94. The angle-of-attack range varied from -2° to approximately 24° at the lower test speeds and from -2° to about 10° at $M = 0.94$. The angle of attack at the higher Mach numbers was limited by tunnel choking conditions.

The spoiler-slot-deflector controls were tested with essentially equal spoiler and deflector projections, through a projection range up to about 10 percent of the local wing chord. The plain flap-type spoiler was tested only at about 8-percent-chord projection.

The variation of average test Reynolds number with Mach number based on the wing mean aerodynamic chord is given in figure 3.

PRESENTATION OF DATA

Incremental aerodynamic coefficients due to control projection for the complete investigation are presented in tabular form as follows:

Table (*)	Type of control	Spanwise location of control, $\frac{y_i}{b/2}$	M	δ, h/c	α
2	Spoiler-slot-deflector	0.25	0.40	Range	Range
3			.60		
4			.70		
5			.81		
6			.85		
7			.90		
8			.94		
9	Plain flap-type spoiler	.25	Range	0.08	Range
10	Spoiler-slot-deflector	.47	.40	Range	Range
11			.60		
12			.70		
13			.81		
14			.85		
15			.90		
16			.94		
17	Plain flap-type spoiler	.47	Range	.08	Range

*Parts (a) of the tables present data for the plain wing and parts (b) for the wing with the modified leading edge.

Lift, drag, and pitching-moment characteristics of the model with the control undeflected are presented in figure 4. These data were obtained from reference 5 to show the model characteristics with and without leading-edge modification since only incremental effects due to control projection were obtained in the present investigation and are presented without discussion.

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A representative part of the test data is plotted in figures 5 to 11 to present graphically the general results of the investigation. The relative roll effectiveness of the spoiler-slot-deflector control is compared with the plain flap-type spoiler in figure 5.

The effect of modifying the wing leading edge on the spoiler-slot-deflector-control characteristics is presented in figures 6 to 9. Figures 10 and 11 present the effect of spanwise location on the aerodynamic effectiveness of the spoiler-slot-deflector control on the wing with the modified leading edge.

The values given for angle of attack α_{avg} in figures 6, 7, and 10 are averages of the angles of attack at which the test points were obtained. The absolute magnitude in angle-of-attack difference between any two appropriate test points is small, as shown in the tables, and results from the jet-boundary and sting-deflection corrections.

RESULTS AND DISCUSSION

Results of this investigation are discussed on the basis of data presented graphically in figures 5 to 11. These data were arbitrarily chosen as being representative. It should be emphasized, however, that complete results are presented in tables 2 to 17.

Comparison Between Plain Flap-Type Spoiler and Spoiler-Slot-Deflector Control

Results presented in figure 5 for 8-percent control projection at $M = 0.85$ indicate that on both the plain and modified wing and at both spanwise positions the spoiler-slot-deflector control was effective in producing rolling moments over a greater angle-of-attack range than the unvented spoiler alone. These results for the plain wing are in general agreement with reference 6. At both spanwise positions, the spoiler-slot-deflector control produced increments in rolling-moment coefficient throughout the test angle-of-attack range, whereas the plain flap-type spoiler was relatively ineffective above $\alpha \approx 10^{\circ}$. Modifying the wing leading edge increased the effectiveness of both types of controls, especially at angles of attack greater than about 4°. In general, both types of controls gave higher static roll effectiveness when located at the inboard spanwise position.

Effect of Wing Leading-Edge Modification on the

Variation of Control Characteristics With Control Projection

The effect of modifying the wing leading edge on the variation of incremental aerodynamic coefficients with spoiler-slot-deflector projection is given for the two spanwise control positions in figures 6 and 7. Modifying the wing leading edge had little effect on the general shape of the curves except for drag and pitching-moment coefficient at the higher test angles of attack.

Rolling-moment coefficient.- The control produced increments in rolling-moment coefficient that were in the proper direction for all test conditions and, in general, ΔC_l increased fairly regularly with control projection (see figs. 6(a) and 7(a)). Control static roll effectiveness was generally increased by modifying the wing leading edge and, in general, the increment in ΔC_l due to leading-edge modification increased with increasing control projection within the test range. Mach number had little effect on the control rolling-moment coefficient.

Yawing-moment coefficient.- Incremental yawing-moment coefficient due to control projection was generally in a favorable direction, and the variation with control projection was fairly regular for angles of attack less than about 16° (figs. 6(b) and 7(b)). Modifying the wing leading edge generally had little effect but in some cases caused a small increase in ΔC_n with control projection. Above $\alpha \approx 16^\circ$, results were somewhat erratic and, in general, there was little variation in ΔC_n with control projection. Mach number had little effect on the control yawing-moment coefficient.

Lift coefficient.- Incremental lift coefficient, in general, decreased fairly regularly with increasing control projection, and the magnitude of ΔC_L for a given control projection was, in most cases, little affected by modifying the wing leading edge (figs. 6(c) and 7(c)). The increment in negative lift coefficient due to control projection was generally larger for the inboard control $\left(\frac{y_i}{b/2} = 0.25\right)$.

Drag coefficient.- Incremental drag coefficient increased fairly regularly with increasing control projection for angles of attack up to about 12°, and above $\alpha \approx 12^\circ$ the variation was somewhat erratic (figs. 6(d) and 7(d)). Modifying the wing leading edge had little effect on ΔC_D due to control projection at zero angle of attack and generally increased the drag coefficient due to control projection at angles of attack greater than zero.

Pitching-moment coefficient.- Projecting the control generally gave a positive increase in pitching-moment coefficient, and ΔC_m usually increased with increasing control projection although the variation was somewhat erratic throughout the test range (figs. 6(e) and 7(e)). Modifying the wing leading edge had a larger effect on the pitching-moment characteristics of the outboard control, and, in general, the effect was to increase the incremental pitching-moment coefficient due to control projection. Increasing the Mach number in the angle-of-attack range from about 4° to 8° resulted in a large positive increase in ΔC_m for certain inboard control projections.

Effect of Wing Leading-Edge Modification on the Variation of the Control Characteristics With Angle of Attack

The effect of modifying the wing leading edge on the variation of incremental rolling- and yawing-moment coefficients with angle of attack is presented for one control projection and the two spanwise control positions in figures 8 and 9. Modifying the wing leading edge did not change the general variation of ΔC_l and ΔC_n with angle of attack and had only a small effect on the absolute magnitude of incremental yawing-moment coefficient. Incremental rolling-moment coefficient was generally increased by leading-edge modification with the increase being larger in the angle-of-attack range from about 6° to 16°. The variation of ΔC_l and ΔC_n with angle of attack was such that for both control spanwise positions the ratio of ΔC_l to ΔC_n was much larger at the higher angles of attack.

Effect of Control Spanwise Position on the Variation of Control Characteristics With Control Projection

The effect of control spanwise position on the variation of incremental aerodynamic coefficients with control projection on the wing with the modified leading edge is shown in figure 10. The general shape of the curves of ΔC_l and ΔC_n with control projection was little affected by spanwise position, but there were erratic effects on the variation of ΔC_m with control projection. Generally speaking, at zero angle of attack the effectiveness of the control in producing increments in rolling-moment coefficient was not affected by control spanwise position, whereas in the angle-of-attack range from approximately 4° to 12° the inboard control $\left(\frac{y_i}{b/2} = 0.25\right)$ was more effective. The outboard control $\left(\frac{y_i}{b/2} = 0.47\right)$

gave larger increments in yawing-moment coefficient for a given control projection throughout the test range. In general, the outboard control also produced larger increments in pitching-moment coefficient although an increase in Mach number tended to reverse this effect in the angle-of-attack range from about 4° to 8°.

Effect of Control Spanwise Position on the Variation of Control Characteristics With Angle of Attack

The effect of control spanwise position on the variation of ΔC_l and ΔC_n with angle of attack for one control projection on the wing with the modified leading edge is presented in figure 11. The general variation of ΔC_l and ΔC_n with angle of attack was unaffected by control spanwise location. The largest effect of control spanwise location on control rolling effectiveness was in the angle-of-attack range from approximately 4° to 14° where the inboard control was more effective. The outboard control produced higher increments of yawing-moment coefficient throughout the test range.

CONCLUSIONS

A wind-tunnel investigation of a wing-fuselage model was made through an angle-of-attack range to a Mach number of 0.94. The purpose was to determine the effects of a wing leading-edge modification on the incremental aerodynamic coefficients due to control projection of a spoiler-slot-deflector control located at two spanwise positions. A comparison was also made with the spoiler part of the control used as a plain flap-type spoiler. Results indicate the following conclusions:

1. Modifying the wing leading edge generally had a beneficial effect on the static lateral control characteristics of both the spoiler-slot-deflector and the plain flap-type spoiler controls.

2. On both the plain and modified wing, the spoiler-slot-deflector control was effective in producing rolling-moment coefficients over a greater angle-of-attack range than the plain flap-type spoiler and, in general, both types of control gave higher roll effectiveness when located at the inboard spanwise position.

3. The incremental yawing-moment coefficient due to spoiler-slot-deflector projection was generally in a favorable direction and higher for the outboard control.

4. For the spoiler-slot-deflector control, there were some fairly large erratic changes in incremental pitching-moment coefficient with either wing leading-edge modification or control projection.

5. With the exception of pitching moment, the increment in aerodynamic force and moment coefficients varied fairly regularly with control projection, and the general shape of the curves was little affected by wing leading-edge modification.

Langley Aeronautical Laboratory,
National Advisory Committee for Aeronautics,
Langley Field, Va., August 27, 1954.

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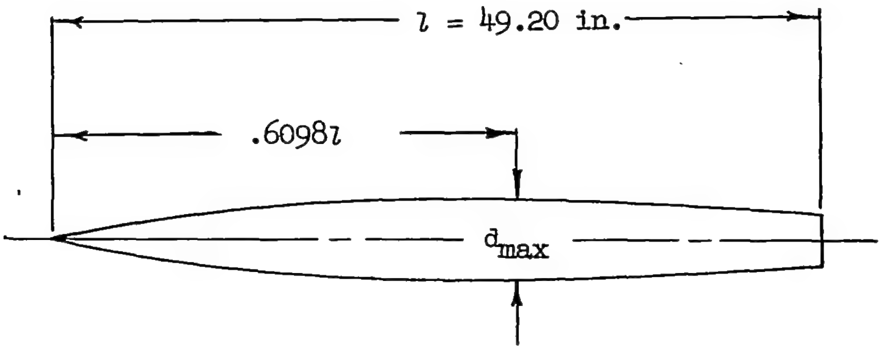
TABLE 1.- FUSELAGE ORDINATES

[Basic fineness ratio 12, actual fineness ratio 9.8 achieved by cutting off rear portion of body]



Ordinates, percent length	
Station	Radius
0	0
.61	.28
.91	.36
1.52	.52
3.05	.88
6.10	1.47
9.15	1.97
12.20	2.40
18.29	3.16
24.39	3.77
30.49	4.23
36.59	4.56
42.68	4.80
48.78	4.95
54.88	5.05
60.98	5.08
67.07	5.04
73.17	4.91
79.27	4.69
85.37	4.34
91.46	3.81
100.00	3.35
Leading-edge radius = 0.0006l	

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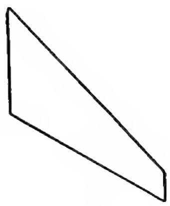

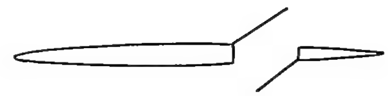

(a) Plain leading edge.

Table 2. Incremental aerodynamic coefficients. $y_i/_{b/2} = .25$ $M = .40$

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.029	.031	- 2.06	-.0436	.0131	.0054	.0035	.0036	.0020
.029	.031	- .02	-.0482	.0112	.0078	.0053	.0034	-.0031
.029	.031	2.04	-.0477	.0091	.0114	.0071	.0029	-.0030
.029	.031	4.10	-.0707	.0057	.0117	.0089	.0022	-.0019
.029	.031	6.15	-.0613	.0024	.0124	.0083	.0018	-.0020
.029	.031	8.23	-.0568	-.0004	.0064	.0075	.0013	.0002
.029	.031	10.28	-.0635	-.0051	.0149	.0101	-.0004	.0010
.029	.031	12.32	-.0445	-.0041	.0142	.0087	-.0012	.0020
.029	.031	14.39	-.0164	-.0003	.0128	.0070	-.0015	.0043
.029	.031	16.42	-.0021	.0002	.0089	.0060	-.0020	.0040
.029	.031	18.44	-.0526	-.0148	.0028	.0046	-.0021	.0061
.029	.031	20.45	-.0183	-.0240	.0079	.0028	-.0026	.0070
.029	.031	23.50	-.0084	-.0037	.0054	.0057	-.0054	.0091
.049	.049	- 2.06	-.0541	.0227	.0068	.0083	.0067	-.0062
.049	.049	- .02	-.0588	.0212	.0107	.0111	.0066	-.0098
.049	.049	2.04	-.0726	.0190	.0146	.0135	.0059	-.0098
.049	.049	4.10	-.0812	.0154	.0175	.0169	.0048	-.0085
.049	.049	6.16	-.0758	.0112	.0199	.0180	.0035	-.0075
.049	.049	8.21	-.0859	.0033	.0107	.0150	.0026	-.0070
.049	.049	10.28	-.0792	-.0004	.0138	.0167	.0006	-.0038
.049	.049	12.32	-.0464	.0009	.0107	.0126	-.0003	-.0020
.049	.049	14.36	-.0360	-.0006	.0107	.0119	-.0014	-.0000
.049	.049	16.42	-.0041	.0244	.0086	.0096	-.0021	.0035
.049	.049	18.45	-.0395	-.0086	.0039	.0074	-.0023	.0054
.049	.049	20.46	-.0105	-.0049	.0068	.0040	-.0024	.0074
.049	.049	23.50	-.0037	-.0030	.0036	.0057	-.0053	.0105
.080	.079	- 2.07	-.0924	.0491	.0253	.0176	.0126	-.0306
.080	.079	- .03	-.1073	.0479	.0292	.0215	.0123	-.0328
.080	.079	2.03	-.1222	.0448	.0339	.0249	.0116	-.0339
.080	.079	4.06	-.1318	.0406	.0375	.0284	.0103	-.0352
.080	.079	6.14	-.1357	.0325	.0406	.0311	.0080	-.0331
.080	.079	8.20	-.1359	.0231	.0357	.0299	.0062	-.0289
.080	.079	10.25	-.1391	.0114	.0295	.0281	.0031	-.0266
.080	.079	12.31	-.1060	.0094	.0278	.0239	.0014	-.0239
.080	.079	14.36	-.0768	.0066	.0242	.0204	-.0002	-.0185
.080	.079	16.40	-.0478	.0044	.0171	.0158	-.0014	-.0132
.080	.079	18.45	-.0741	-.0098	.0128	.0122	-.0018	-.0085
.080	.079	20.47	-.0134	.0039	.0175	.0082	-.0022	-.0031
.080	.079	23.48	-.0415	-.0117	.0157	.0086	-.0046	-.0015
096	.103	- 2.06	-.1327	.0691	.0332	.0219	.0182	-.0275
.096	.103	- .04	-.1482	.0677	.0379	.0262	.0178	-.0336
.096	.103	2.00	-.1730	.0652	.0425	.0309	.0171	-.0357
.096	.103	6.11	-.1962	.0482	.0535	.0391	.0131	-.0348
.096	.103	8.17	-.1954	.0342	.0471	.0386	.0099	-.0298
.096	.103	10.23	-.1900	.0218	.0359	.0327	.0064	-.0245
.096	.103	12.26	-.1703	.0135	.0338	.0312	.0043	-.0214
.096	.103	14.34	-.1359	.0086	.0299	.0276	.0022	-.0124
.096	.103	16.40	-.0840	.0116	.0268	.0233	.0008	-.0069
.096	.103	18.43	-.1053	-.0033	.0214	.0188	-.0001	-.0005
.096	.103	20.44	-.0910	-.0118	.0314	.0151	-.0020	.0046
.096	.103	23.47	-.0876	-.0193	.0264	.0145	-.0043	.0088

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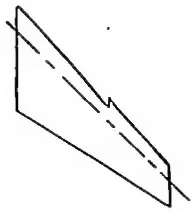
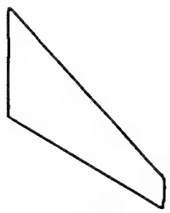
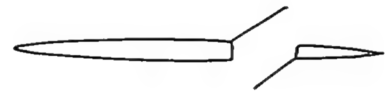


(b) *Modified leading edge.*

Table 2. Concluded.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.011	.011	-2.06	-.0342	.0049	.0003	.0029	.0009	-.0085
.011	.011	-.02	-.0335	.0033	.0017	.0036	.0010	-.0096
.011	.011	2.03	-.0323	.0032	.0016	.0044	.0008	-.0096
.011	.011	4.09	-.0413	.0012	.0008	.0025	.0007	-.0073
.011	.011	6.15	-.0493	-.0005	.0029	.0033	.0005	-.0060
.011	.011	8.20	-.0527	-.0024	.0017	.0039	.0001	-.0048
.011	.011	10.26	-.0419	-.0038	.0031	.0029	.0001	-.0049
.011	.011	12.32	-.0304	-.0051	-.0012	.0042	-.0010	-.0038
.011	.011	14.36	-.0059	-.0028	-.0031	.0023	-.0010	-.0027
.011	.011	16.39	.0039	.0003	-.0023	.0013	-.0010	-.0002
.011	.011	18.44	.0141	.0024	-.0052	.0014	-.0014	-.0002
.011	.011	20.46	-.0298	-.0129	-.0060	.0010	-.0021	.0004
.011	.011	23.50	.0023	.0001	-.0067	-.0009	-.0029	.0037
.029	.031	-2.08	-.0622	.0138	.0032	.0048	.0031	-.0074
.029	.031	-.02	-.0582	.0117	.0007	.0059	.0031	-.0096
.029	.031	2.04	-.0577	.0104	.0057	.0082	.0027	-.0095
.029	.031	4.07	-.0672	.0077	.0071	.0095	.0022	-.0096
.029	.031	6.15	-.0670	.0056	.0093	.0107	.0016	-.0083
.029	.031	8.20	-.0628	.0031	.0061	.0100	.0010	-.0073
.029	.031	10.26	-.0721	-.0023	.0053	.0092	.0003	-.0065
.029	.031	12.30	-.0477	-.0047	.0044	.0077	-.0003	-.0069
.029	.031	14.36	-.0377	-.0083	-.0007	.0045	-.0009	-.0049
.029	.031	16.39	-.0273	-.0076	.0022	.0051	-.0017	-.0025
.029	.031	18.43	-.0136	-.0058	-.0032	.0036	-.0019	-.0001
.029	.031	20.45	-.0528	-.0231	-.0015	.0024	-.0020	-.0007
.029	.031	23.49	-.00-4	-.0039	-.0050	.0029	-.0031	.0018
.049	.049	-2.08	-.0646	.0252	.0068	.0054	.0064	-.0249
.049	.049	-.02	-.0397	.0234	.0072	.0123	.0058	-.0241
.049	.049	2.04	-.0585	.0220	.0107	.0156	.0053	-.0227
.049	.049	4.10	-.0636	.0209	.0132	.0175	.0046	-.0240
.049	.049	6.13	-.0776	.0163	.0172	.0200	.0036	-.0227
.049	.049	8.19	-.0873	.0114	.0150	.0205	.0024	-.0205
.049	.049	10.26	-.07-6	.0085	.0126	.0183	.0014	-.0198
.049	.049	12.30	-.0496	.0060	.0080	.0165	.0002	-.0179
.049	.049	14.36	-.0163	.0053	.0025	.0099	-.0008	-.0114
.049	.049	16.42	.0226	.0107	.0056	.0096	-.0022	-.0081
.049	.049	18.45	.0002	.0025	.0016	.0085	-.0032	-.0061
.049	.049	20.47	-.0208	-.0086	.0069	.0069	-.0034	-.0040
.049	.049	23.49	-.0085	-.0017	-.0035	.0053	-.0042	-.0006
.080	.079	-2.09	-.1325	.0523	.0221	.0215	.0128	-.0349
.080	.079	-.05	-.1470	.0484	.0238	.0239	.0120	-.0373
.080	.079	4.04	-.1698	.0411	.0334	.0313	.0105	-.0381
.080	.079	6.10	-.1881	.0346	.0354	.0341	.0091	-.0368
.080	.079	8.16	-.1959	.0241	.0353	.0357	.0069	-.0348
.080	.079	10.21	-.1703	.0182	.0371	.0352	.0049	-.0329
.080	.079	12.27	-.1399	.0100	.0270	.0305	.0025	-.0318
.080	.079	14.32	-.1090	.0009	.0167	.0215	.0007	-.0222
.080	.079	16.36	-.0864	-.0047	.0132	.0166	-.0015	-.0147
.080	.079	18.29	-.3171	-.0913	-.0073	.0133	-.0029	-.0118
.080	.079	20.44	-.0962	-.0284	.0174	.0118	-.0037	-.0061
.080	.079	23.46	-.0593	-.0186	.0092	.0097	-.0044	.0001
.096	.103	-2.10	-.1646	.0726	.0387	.0264	.0182	-.0467
.096	.103	-.07	-.1720	.0684	.0383	.0288	.0179	-.0450
.096	.103	4.03	-.1996	.0633	.0465	.0374	.0166	-.0466
.096	.103	6.09	-.2198	.0545	.0494	.0407	.0148	-.0481
.096	.103	8.14	-.2387	.0425	.0494	.0440	.0120	-.0474
.096	.103	10.20	-.2250	.0330	.0484	.0435	.0096	-.0443
.096	.103	12.27	-.1771	.0234	.0420	.0376	.0069	-.0436
.096	.103	14.31	-.1412	.0115	.0351	.0293	.0036	-.0320
.096	.103	16.37	-.1002	.0074	.0382	.0240	.0007	-.0211
.096	.103	18.40	-.1212	-.0106	.0270	.0194	-.0008	-.0161
.096	.103	20.46	-.0952	-.0137	.0295	.0173	-.0019	-.0104
.096	.103	23.47	-.0729	-.0107	.0205	.0161	-.0024	-.0065

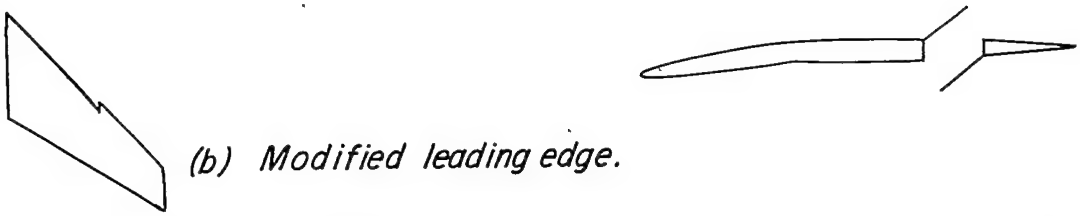




(a) Plain leading edge.

Table 3. Incremental aerodynamic coefficients. $y_i/(b/2) = .25$ $M = .60$

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.029	.031	- 2.08	-.0377	.0136	.0031	.0028	.0036	-.0032
.029	.031	- .01	-.0420	.0126	.0067	.0049	.0034	-.0039
.029	.031	2.07	-.0485	.0104	.0097	.0071	.0029	-.0044
.029	.031	4.16	-.0596	.0049	.0136	.0086	.0022	-.0041
.029	.031	6.25	-.0554	.0038	.0110	.0079	.0019	-.0036
.029	.031	8.35	-.0480	.0010	.0072	.0075	.0011	-.0027
.029	.031	10.45	-.0452	-.0013	.0131	.0115	-.0010	-.0000
.029	.031	12.52	-.0336	-.0021	.0115	.0079	-.0012	.0009
.029	.031	14.59	-.0335	-.0055	.0071	.0057	-.0015	.0031
.029	.031	16.63	-.0333	-.0074	.0027	.0050	-.0017	.0036
.029	.031	18.64	-.0168	-.0046	.0040	.0023	-.0015	.0054
.029	.031	20.64	-.0094	-.0029	.0049	.0024	-.0020	.0059
.029	.031	23.69	-.0226	-.0085	.0036	.0048	-.0052	.0146
.049	.049	- 2.09	-.0503	.0236	.0043	.0074	.0065	-.0090
.049	.049	- .02	-.0670	.0228	.0095	.0100	.0063	-.0109
.049	.049	2.06	-.0737	.0204	.0147	.0136	.0057	-.0114
.049	.049	4.14	-.0964	.0151	.0213	.0171	.0044	-.0112
.049	.049	6.23	-.0892	.0109	.0212	.0174	.0031	-.0084
.049	.049	8.43	.0456	.0240	.0187	.0145	.0021	-.0061
.049	.049	10.43	-.0712	.0007	.0130	.0179	-.0001	-.0033
.049	.049	12.51	-.0502	-.0004	.0118	.0120	-.0007	-.0009
.049	.049	14.59	-.0375	-.0028	.0109	.0098	-.0016	.0004
.049	.049	16.63	-.0374	-.0056	.0036	.0081	-.0021	.0039
.049	.049	18.64	-.0235	-.0057	.0051	.0035	-.0011	.0071
.049	.049	20.65	-.0069	-.0014	.0053	.0034	-.0016	.0076
.049	.049	23.69	-.0237	-.0087	.0051	.0063	-.0060	.0119
.080	.079	- 2.10	-.0963	.0477	.0241	.0169	.0124	-.0260
.080	.079	- .03	-.1158	.0472	.0302	.0214	.0122	-.0284
.080	.079	2.04	-.1307	.0442	.0352	.0252	.0115	-.0301
.080	.079	4.12	-.1517	.0381	.0420	.0295	.0099	-.0305
.080	.079	6.21	-.1538	.0304	.0425	.0319	.0079	-.0279
.080	.079	8.30	-.1417	.0201	.0329	.0302	.0054	-.0834
.080	.079	10.41	-.1178	.0127	.0195	.0254	.0028	-.0199
.080	.079	12.50	-.0862	.0106	.0223	.0212	.0013	-.0138
.080	.079	14.56	-.0731	.0025	.0163	.0160	.0001	-.0091
.080	.079	16.64	-.0490	.0027	.0142	.0127	-.0005	-.0045
.080	.079	18.63	-.0388	-.0002	.0160	.0084	-.0004	-.0003
.080	.079	20.65	-.0237	.0026	.0192	.0091	-.0017	.0007
.080	.079	23.70	-.0327	-.0034	.0165	.0101	-.0047	.0067
.096	.103	- 2.12	-.1211	.0673	.0268	.0188	.0176	-.0350
.096	.103	- .05	-.1434	.0654	.0331	.0238	.0171	-.0348
.096	.103	2.03	-.1637	.0632	.0392	.0290	.0167	-.0356
.096	.103	4.10	-.1877	.0569	.0476	.0341	.0151	-.0372
.096	.103	6.19	-.2037	.0469	.0528	.0388	.0126	-.0339
.096	.103	8.29	-.1866	.0328	.0421	.0365	.0091	-.0273
.096	.103	10.38	-.1622	.0236	.0276	.0325	.0054	-.0230
.096	.103	12.48	-.1380	.0167	.0313	.0274	.0041	-.0156
.096	.103	14.55	-.1129	.0100	.0281	.0239	.0023	-.0096
.096	.103	16.61	-.1116	.0007	.0237	.0200	.0011	-.0041
.096	.103	18.63	-.0739	.0034	.0334	.0169	-.0005	.0029
.096	.103	20.63	-.0629	.0045	.0314	.0159	-.0008	.0035
.096	.103	23.69	-.0654	-.0018	.0285	.0164	-.0036	.0084



(b) Modified leading edge.

Table 3. Concluded.

δ_s	δ_d	a	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.011	.011	-2.11	-.0345	.0052	.0047	.0031	.0012	-.0025
.011	.011	-.02	-.0266	.0040	.0034	.0027	.0009	-.0066
.011	.011	2.07	-.0352	.0030	.0041	.0037	.0008	-.0053
.011	.011	4.15	-.0342	.0028	.0036	.0045	.0006	-.0040
.011	.011	6.24	-.0284	.0016	.0032	.0048	.0004	-.0033
.011	.011	8.33	-.0317	-.0000	.0078	.0043	-.0000	-.0023
.011	.011	10.41	-.0350	-.0016	.0082	.0032	-.0006	-.0021
.011	.011	12.48	-.0151	-.0064	.0066	.0002	-.0005	-.0010
.011	.011	14.54	-.0134	-.0062	.0063	.0015	-.0008	.0023
.011	.011	16.59	-.0123	-.0062	-.0045	.0023	-.0014	.0022
.011	.011	18.66	.0106	-.0005	.0037	.0014	-.0019	.0026
.011	.011	20.68	.0036	-.0042	.0034	-.0001	-.0019	.0043
.011	.011	23.68	.0037	-.0060	.0064	.0013	-.0029	.0022
.029	.031	-2.12	-.0529	.0137	.0050	.0048	.0033	-.0039
.029	.031	-.03	-.0519	.0119	.0042	.0044	.0032	-.0080
.029	.031	2.05	-.0662	.0101	.0082	.0074	.0028	-.0078
.029	.031	4.13	-.0738	.0087	.0102	.0093	.0023	-.0073
.029	.031	6.22	-.0620	.0068	.0120	.0107	.0016	-.0060
.029	.031	8.32	-.0720	.0018	.0134	.0096	.0008	-.0053
.029	.031	10.41	-.0438	.0029	.0102	.0079	.0001	-.0057
.029	.031	12.53	-.0338	-.0035	.0801	.0052	-.0002	-.0044
.029	.031	14.52	-.0371	-.0018	.0097	.0042	-.0008	-.0020
.029	.031	16.58	-.0324	-.0079	.0090	.0037	-.0014	-.0003
.029	.031	18.65	-.0069	-.0026	.0044	.0024	-.0017	.0001
.029	.031	20.66	-.0291	-.0147	.0101	.0016	-.0015	.0026
.029	.031	23.69	.0011	-.0042	.0040	.0013	-.0018	-.0001
.049	.049	-2.11	-.0604	.0254	.0091	.0098	.0065	-.0160
.049	.049	-.04	-.0643	.0227	.0080	.0108	.0060	-.0188
.049	.049	2.05	-.0794	.0215	.0157	.0142	.0056	-.0173
.049	.049	4.13	-.0873	.0204	.0192	.0177	.0048	-.0166
.049	.049	6.22	-.0953	.0159	.0213	.0199	.0038	-.0162
.049	.049	8.31	-.0935	.0109	.0251	.0200	.0024	-.0149
.049	.049	10.40	-.0710	.0094	.0184	.0165	.0012	-.0139
.049	.049	12.47	-.0392	.0068	.0150	.0118	.0006	-.0100
.049	.049	14.54	-.0277	.0022	.0163	.0091	-.0010	-.0052
.049	.049	16.59	-.0336	-.0025	.0148	.0079	-.0019	-.0032
.049	.049	18.66	.0059	.0071	.0131	.0068	-.0029	-.0016
.049	.049	20.68	-.0345	-.0087	.0293	.0119	-.0035	.0014
.049	.049	23.68	-.0300	-.0112	.0085	.0024	-.0022	-.0002
.080	.079	-2.14	-.1288	.0507	.0308	.0216	.0130	-.0285
.080	.079	-.07	-.1367	.0474	.0295	.0229	.0122	-.0333
.080	.079	2.01	-.1626	.0450	.0366	.0269	.0115	-.0319
.080	.079	4.09	-.1767	.0421	.0416	.0315	.0108	-.0310
.080	.079	6.17	-.1784	.0353	.0414	.0341	.0090	-.0314
.080	.079	8.25	-.1978	.0237	.0472	.0358	.0066	-.0284
.080	.079	10.35	-.1766	.0166	.0439	.0333	.0041	-.0253
.080	.079	12.42	-.1496	.0055	.0370	.0262	.0027	-.0194
.080	.079	14.50	-.0731	.0067	.0148	.0173	.0005	-.0114
.080	.079	16.56	-.0449	.0058	-.0032	.0133	-.0009	-.0051
.080	.079	18.64	-.0425	.0003	.0253	.0128	-.0021	-.0025
.080	.079	20.66	-.0662	-.0110	.0397	.0169	-.0035	.0009
.080	.079	23.68	-.0263	-.0065	.0181	.0066	-.0020	.0042
.096	.103	-2.15	-.1516	.0685	.0387	.0247	.0175	-.0404
.096	.103	-.09	-.1528	.0661	.0361	.0258	.0174	-.0416
.096	.103	4.08	-.2143	.0619	.0510	.0367	.0162	-.0428
.096	.103	6.16	-.2159	.0542	.0507	.0393	.0140	-.0434
.096	.103	8.25	-.2321	.0421	.0592	.0433	.0111	-.0405
.096	.103	10.34	-.1974	.0351	.0527	.0387	.0084	-.0376
.096	.103	12.42	-.1639	.0222	.0493	.0340	.0061	-.0320
.096	.103	14.49	-.1391	.0080	.0405	.0245	.0029	-.0210
.096	.103	16.57	-.0902	.0097	.0354	.0205	.0011	-.0136
.096	.103	18.63	-.0833	.0018	.0378	.0177	-.0001	-.0074
.096	.103	20.65	-.1068	-.0103	.0590	.0237	-.0020	-.0066
.096	.103	23.68	-.0555	-.0023	.0315	.0135	-.0000	-.0062
.096	.103							

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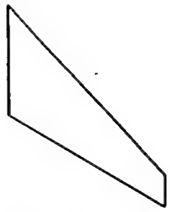
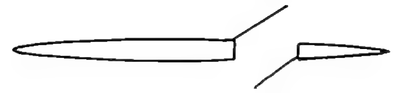
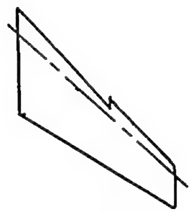




(a) Plain leading edge.

Table 4. Incremental aerodynamic coefficients. $y_i/_{b/2}$=.25 M=.70

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.029	.031	- 2.10	-.0363	.0135	.0034	.0023	.0036	-.0044
.029	.031	- .00	-.0455	.0127	.0068	.0047	.0034	-.0058
.029	.031	2.10	-.0485	.0107	.0121	.0070	.0030	-.0052
.029	.031	4.19	-.0610	.0067	.0154	.0092	.0022	-.0045
.029	.031	6.30	-.0572	.0040	.0130	.0079	.0013	-.0035
.029	.031	8.41	-.0512	.0009	.0100	.0076	.0007	-.0018
.029	.031	10.53	-.0549	-.0042	.0159	.0093	-.0006	.0004
.029	.031	12.60	-.0437	-.0046	.0107	.0073	-.0011	.0006
.029	.031	14.65	-.0434	-.0081	.0067	.0051	-.0015	.0022
.029	.031	16.71	-.0233	-.0023	.0021	.0042	-.0018	.0032
.029	.031	18.71	-.0087	-.0017	.0042	.0019	-.0005	.0057
.029	.031	20.73	-.0096	-.0021	.0038	.0019	-.0016	.0047
.029	.031	23.78	-.0186	-.0063	.0041	.0040	-.0038	.0081
.049	.049	- 2.11	-.0564	.0239	.0042	.0068	.0064	-.0108
.049	.049	- .03	-.0696	.0229	.0091	.0099	.0062	-.0117
.049	.049	2.08	-.0821	.0201	.0159	.0136	.0056	-.0111
.049	.049	4.17	-.0961	.0150	.0226	.0169	.0044	-.0110
.049	.049	6.29	-.0922	.0106	.0220	.0170	.0033	-.0079
.049	.049	8.40	-.0747	.0059	.0132	.0145	.0015	-.0043
.049	.049	10.50	-.0808	-.0014	.0178	.0155	.0004	-.0028
.049	.049	12.59	-.0519	-.0031	.0127	.0114	-.0006	-.0003
.049	.049	14.66	-.0495	-.0062	.0088	.0083	-.0014	.0016
.049	.049	16.71	-.0288	-.0030	.0034	.0067	-.0020	.0044
.049	.049	18.70	-.0122	-.0013	.0060	.0038	-.0011	.0057
.049	.049	20.73	-.0047	.0005	.0062	.0028	-.0010	.0067
.049	.049	23.79	-.0175	-.0058	.0067	.0055	-.0048	.0141
.080	.079	- 2.13	-.0990	.0467	.0219	.0156	.0120	-.0280
.080	.079	- .04	-.1184	.0459	.0298	.0205	.0119	-.0281
.080	.079	2.05	-.1374	.0429	.0374	.0255	.0112	-.0284
.080	.079	4.14	-.1599	.0365	.0447	.0300	.0096	-.0289
.080	.079	6.25	-.1710	.0271	.0469	.0314	.0076	-.0251
.080	.079	8.36	-.1458	.0175	.0317	.0314	.0050	-.0201
.080	.079	10.47	-.1275	.0095	.0218	.0219	.0032	-.0164
.080	.079	12.58	-.0885	.0072	.0213	.0188	.0016	-.0105
.080	.079	14.65	-.0685	.0023	.0158	.0137	.0004	-.0058
.080	.079	16.70	-.0582	-.0014	.0145	.0107	-.0001	-.0032
.080	.079	18.72	-.0269	.0042	.0170	.0079	.0005	-.0009
.080	.079	20.73	-.0260	.0027	.0185	.0080	-.0003	.0025
.080	.079	23.79	-.0388	-.0068	.0195	.0092	-.0034	.0101
.096	.103	- 2.13	-.1139	.0656	.0231	.0166	.0169	-.0337
.096	.103	- .05	-.1321	.0648	.0291	.0218	.0167	-.0343
.096	.103	2.03	-.1616	.0613	.0362	.0265	.0160	-.0347
.096	.103	4.12	-.1841	.0530	.0432	.0315	.0140	-.0338
.096	.103	6.23	-.2024	.0439	.0524	.0366	.0118	-.0308
.096	.103	8.33	-.1919	.0301	.0421	.0383	.0087	-.0254
.096	.103	10.45	-.1601	.0206	.0300	.0272	.0059	-.0192
.096	.103	12.55	-.1400	.0134	.0309	.0257	.0041	-.0132
.096	.103	14.64	-.1099	.0086	.0291	.0231	.0021	-.0067
.096	.103	16.68	-.0920	.0059	.0275	.0187	.0009	-.0022
.096	.103	18.69	-.0709	.0054	.0313	.0156	.0007	.0008
.096	.103	20.71	-.0675	.0037	.0309	.0150	.0005	.0023
.096	.103	23.78	-.0633	.0003	.0317	.0163	-.0025	.0112



(b) Modified leading edge.

Table 4. Concluded.

δ_s	δ_d	a	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.011	.011	- 2.12	-.0341	.0050	.0036	.0023	.0012	-.0031
.011	.011	- .03	-.0273	.0040	.0037	.0025	.0010	-.0068
.011	.011	2.07	-.0376	.0033	.0042	.0033	.0009	-.0052
.011	.011	4.53	.3552	.0333	.0356	.0046	.0008	-.0016
.011	.011	6.28	-.0442	.0021	.0102	.0054	.0003	-.0032
.011	.011	8.38	-.0424	.0076	.0056	.0041	-.0001	-.0019
.011	.011	10.49	-.0246	-.0051	.0073	.0039	-.0009	-.0006
.011	.011	12.56	.0040	-.0022	.0053	-.0005	-.0006	.0023
.011	.011	14.63	-.0179	-.0037	.0084	.0018	-.0009	.0028
.011	.011	16.70	.0285	.0088	.0053	.0083	-.0015	.0040
.011	.011	18.75	-.0011	.0005	.0073	.0009	-.0018	.0023
.011	.011	20.77	.0007	.0019	.0158	-.0068	.0004	.0059
.011	.011	23.79	.0070	-.0001	.0065	.0025	-.0038	.0039
.029	.031	- 2.13	-.0619	.0139	.0037	.0039	.0034	-.0039
.029	.031	- .04	-.0569	.0121	.0045	.0054	.0031	-.0080
.029	.031	2.06	-.0687	.0104	.0077	.0076	.0028	-.0075
.029	.031	4.16	-.0729	.0085	.0110	.0094	.0024	-.0065
.029	.031	6.26	-.0830	.0064	.0151	.0108	.0017	-.0056
.029	.031	8.37	-.0768	.0096	.0165	.0093	.0009	-.0052
.089	.031	10.47	-.0539	-.0034	.0089	.0083	-.0002	-.0030
.029	.031	12.56	-.0211	.0020	.0093	.0054	-.0002	-.0012
.029	.031	14.63	-.0303	-.0009	.0103	.0046	-.0010	-.0006
.029	.031	16.68	-.0037	.0041	.0066	.0040	-.0014	.0009
.029	.031	18.75	-.0153	-.0007	.0099	.0038	-.0016	.0012
.029	.031	20.75	-.0245	-.0063	.0198	.0092	-.0033	.0023
.029	.031	23.79	.0033	-.0026	.0040	.0010	-.0001	.0016
.049	.049	- 2.15	-.0760	.0258	.0090	.0089	.0064	-.0159
.049	.049	- .04	-.0636	.0235	.0084	.0104	.0059	-.0180
.049	.049	2.06	-.0793	.0222	.0145	.0140	.0055	-.0168
.049	.049	4.16	-.0930	.0193	.0197	.0173	.0048	-.0158
.049	.049	6.25	-.1067	.0160	.0262	.0200	.0037	-.0146
.049	.049	8.37	-.1003	.0185	.0296	.0197	.0023	-.0133
.049	.049	10.47	-.0741	.0051	.0205	.0168	.0007	-.0100
.049	.049	12.55	-.0320	.0078	.0150	.0104	.0005	-.0060
.049	.049	14.62	-.0347	.0026	.0152	.0088	-.0009	-.0032
.049	.049	16.68	-.0075	.0067	.0110	.0074	-.0020	-.0005
.049	.049	18.84	.0678	.0317	.0268	.0082	-.0028	-.0000
.049	.049	20.76	-.0201	-.0002	.0244	.0103	-.0035	.0018
.049	.049	23.80	-.0006	.0007	.0075	.0027	-.0017	.0037
.080	.079	- 2.17	-.1354	.0495	.0309	.0199	.0126	-.0284
.080	.079	- .16	-.2318	.0465	.0237	.0225	.0121	-.0317
.080	.079	2.01	-.1655	.0441	.0372	.0268	.0114	-.0304
.080	.079	4.11	-.1841	.0406	.0430	.0313	.0107	-.0292
.080	.079	6.21	-.1906	.0347	.0477	.0333	.0087	-.0285
.080	.079	8.31	-.1988	.0319	.0543	.0356	.0065	-.0256
.080	.079	10.42	-.1512	.0166	.0395	.0314	.0038	-.0199
.080	.079	12.50	-.1104	.0113	.0342	.0237	.0026	-.0138
.080	.079	14.57	-.0862	.0044	.0054	.0154	.0007	-.0076
.080	.079	16.64	-.0372	.0089	.0100	.0127	-.0008	-.0020
.080	.079	18.73	-.0516	.0008	.0288	.0132	-.0015	-.0003
.080	.079	20.75	-.0488	-.0022	.0363	.0148	-.0025	.0034
.080	.079	23.79	-.0277	-.0036	.0146	.0071	-.0015	.0067
.096	.103	- 2.18	-.1548	.0672	.0361	.0229	.0169	-.0389
.096	.103	- .08	-.1448	.0650	.0337	.0243	.0168	-.0397
.096	.103	4.09	-.2084	.0590	.0458	.0340	.0156	-.0394
.096	.103	6.19	-.2173	.0525	.0515	.0369	.0133	-.0393
.096	.103	8.30	-.2422	.0480	.0679	.0424	.0105	-.0370
.096	.103	10.41	-.1972	.0293	.0516	.0382	.0073	-.0306
.096	.103	12.51	-.1250	.0247	.0427	.0323	.0053	-.0241
.096	.103	14.57	-.1331	.0098	.0378	.0226	.0029	-.0161
.096	.103	16.65	-.0806	.0127	.0341	.0187	.0012	-.0097
.096	.103	18.73	-.0817	.0067	.0460	.0192	.0002	-.0071
.096	.103	20.75	-.0910	-.0012	.0527	.0251	-.0026	-.0046
.096	.103	23.79	-.06-8	-.0017	.0343	.0139	.0007	-.0024

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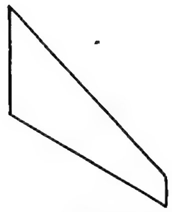
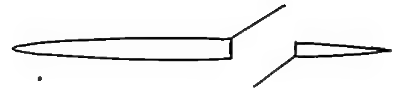
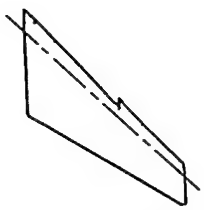




(a) Plain leading edge.

Table 5. Incremental aerodynamic coefficients. $y_i/(b/2)$ =.25 M=.81

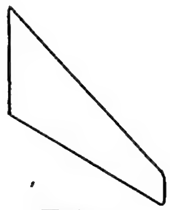
δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.029	.031	- 2.10	-.0291	.0139	.0040	.0018	.0036	-.0045
.029	.031	- .00	-.0426	.0131	.0086	.0047	.0034	-.0057
.029	.031	2.11	-.0495	.0109	.0133	.0076	.0028	-.0058
.029	.031	4.23	-.0583	.0080	.0177	.0095	.0022	-.0051
.029	.031	6.36	-.0565	.0041	.0146	.0091	.0013	-.0030
.029	.031	8.49	-.0644	.0001	.0234	.0100	.0001	-.0025
.029	.031	10.59	-.0410	-.0007	.0147	.0082	-.0005	-.0002
.029	.031	12.67	-.0401	-.0052	.0143	.0061	-.0011	.0010
.029	.031	14.73	-.0267	-.0032	.0058	.0049	-.0014	.0026
.029	.031	16.78	-.0222	-.0038	.0045	.0030	-.0010	.0036
.029	.031	18.80	-.0103	-.0019	.0062	.0018	-.0004	.0043
.029	.031	20.83	.0005	.0019	.0048	.0023	-.0009	.0042
.029	.031	23.91	.0013	.0020	.0014	.0029	-.0021	.0084
.049	.049	- 2.13	-.0538	.0249	.0058	.0061	.0065	-.0100
.049	.049	- .03	-.0706	.0236	.0111	.0099	.0062	-.0120
.049	.049	2.09	-.0793	.0209	.0178	.0135	.0056	-.0120
.049	.049	4.20	-.0954	.0165	.0259	.0173	.0045	-.0106
.049	.049	6.33	-.0922	.0118	.0240	.0181	.0033	-.0086
.049	.049	8.46	-.0892	.0051	.0239	.0158	.0010	-.0059
.049	.049	10.57	-.0549	.0032	.0164	.0128	.0004	-.0032
.049	.049	12.68	-.0456	-.0019	.0164	.0100	-.0007	.0007
.049	.049	14.74	-.0302	-.0011	.0084	.0074	-.0013	.0029
.049	.049	16.78	-.0300	-.0040	.0067	.0053	-.0013	.0045
.049	.049	18.79	-.0179	-.0025	.0060	.0040	-.0010	.0056
.049	.049	20.83	-.0144	-.0026	.0070	.0037	-.0012	.0063
.049	.049	23.90	-.0121	-.0035	.0002	.0044	-.0039	.0133
.080	.079	- 2.14	-.0940	.0465	.0220	.0143	.0118	-.0259
.080	.079	- .06	-.1170	.0455	.0183	.0199	.0116	-.0259
.080	.079	2.07	-.1399	.0428	.0391	.0245	.0110	-.0268
.080	.079	4.17	-.1564	.0367	.0472	.0294	.0093	-.0264
.080	.079	6.30	-.1515	.0284	.0440	.0299	.0070	-.0217
.080	.079	8.43	-.1449	.0172	.0331	.0243	.0039	-.0171
.080	.079	10.55	-.0983	.0128	.0249	.0193	.0031	-.0139
.080	.079	12.66	-.0763	.0063	.0244	.0157	.0015	-.0081
.080	.079	14.74	-.0469	.0077	.0178	.0120	.0010	-.0033
.080	.079	16.78	-.0499	.0015	.0174	.0088	.0014	-.0025
.080	.079	18.78	-.0489	-.0031	.0217	.0077	.0011	-.0009
.080	.079	20.81	-.0329	.0005	.0207	.0082	.0002	.0032
.080	.079	23.90	-.0307	-.0030	.0147	.0082	-.0020	.0112
.096	.103	- 2.15	-.0979	.0650	.0193	.0140	.0164	-.0339
.096	.103	- .05	-.1236	.0640	.0277	.0202	.0163	-.0339
.096	.103	2.04	-.1525	.0608	.0378	.0256	.0155	-.0343
.096	.103	4.15	-.1853	.0529	.0461	.0306	.0136	-.0324
.096	.103	6.29	-.1781	.0426	.0456	.0328	.0106	-.0269
.096	.103	8.40	-.1872	.0257	.0404	.0309	.0064	-.0204
.096	.103	10.53	-.1260	.0227	.0286	.0233	.0056	-.0166
.096	.103	12.63	-.1206	.0139	.0357	.0237	.0035	-.0108
.096	.103	14.72	-.0892	.0133	.0302	.0199	.0022	-.0050
.096	.103	16.76	-.0917	.0051	.0329	.0161	.0021	-.0019
.096	.103	18.77	-.0794	.0028	.0329	.0146	.0021	-.0009
.096	.103	20.81	-.0680	.0039	.0376	.0148	.0012	.0083
.096	.103	23.88	-.0728	-.0051	.0309	.0154	-.0017	.0114

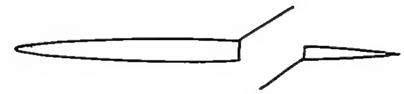


(b) Modified leading edge.

Table 5. Concluded.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.011	.011	-2.14	-.0283	.0048	.0040	.0021	.0012	-.0029
.011	.011	-.03	-.0320	.0045	.0048	.0031	.0010	-.0059
.011	.011	2.10	-.0406	.0039	.0057	.0040	.0009	-.0041
.011	.011	4.21	-.0408	.0030	.0069	.0051	.0006	-.0033
.011	.011	6.34	-.0420	.0038	.0095	.0054	.0004	-.0026
.011	.011	8.46	-.0361	.0002	.0145	.0050	-.0006	-.0010
.011	.011	10.53	-.0183	.0010	-.0208	.0034	-.0011	.0015
.011	.011	12.64	-.0011	.0041	.0074	.0022	-.0007	.0034
.011	.011	14.71	-.0000	.0041	.0042	.0020	-.0012	.0031
.011	.011	16.77	.0011	.0045	.0037	.0020	-.0013	.0035
.011	.011	18.82	-.0049	.0018	.0057	.0016	-.0018	.0036
.011	.011	20.84	.0028	.0013	.0190	.0023	-.0032	.0052
.011	.011	23.92	.0302	.0135	.0103	.0029	-.0040	.0070
.029	.031	-2.16	-.0558	.0139	.0045	.0041	.0033	-.0042
.029	.031	-.05	-.0602	.0129	.0061	.0053	.0033	-.0066
.029	.031	2.07	-.0766	.0111	.0108	.0079	.0030	-.0066
.029	.031	4.19	-.0816	.0087	.0141	.0104	.0024	-.0063
.029	.031	6.33	-.0674	.0086	.0161	.0112	.0018	-.0058
.029	.031	8.44	-.0818	.0030	.0199	.0096	.0009	-.0043
.029	.031	10.56	-.0360	.0023	.0062	.0067	-.0006	-.0011
.029	.031	12.62	-.0416	-.0008	.0126	.0060	-.0004	.0016
.029	.031	14.69	-.0192	.0012	.0083	.0048	-.0011	.0011
.029	.031	16.74	-.0356	-.0051	.0064	.0044	-.0013	.0018
.029	.031	18.81	-.0362	-.0090	.0093	.0040	-.0013	.0017
.029	.031	20.82	-.0248	-.0094	.0232	.0019	-.0008	.0026
.029	.031	23.90	.0005	.0034	.0091	.0009	-.0000	.0087
.049	.049	-2.17	-.0657	.0261	.0113	.0091	.0063	-.0155
.049	.049	-.05	-.0707	.0237	.0110	.0102	.0061	-.0168
.049	.049	2.06	-.0937	.0224	.0168	.0138	.0057	-.0158
.049	.049	4.19	-.1064	.0193	.0244	.0183	.0050	-.0155
.049	.049	6.31	-.1123	.0172	.0300	.0211	.0038	-.0138
.049	.049	8.42	-.1126	.0108	.0338	.0194	.0025	-.0112
.049	.049	10.53	-.0763	.0069	.0177	.0153	.0002	-.0052
.049	.049	12.64	-.0369	.0099	.0197	.0111	.0001	-.0042
.049	.049	14.69	-.0357	.0042	.0165	.0083	-.0010	-.0007
.049	.049	16.76	-.0247	.0048	.0098	.0063	-.0015	.0007
.049	.049	18.82	-.0476	-.0017	.0269	.0128	-.0028	.0011
.049	.049	20.83	-.0094	.0024	.0126	.0038	-.0012	.0029
.049	.049	23.87	-.0013	.0045	-.0088	.0019	-.0003	.0045
.080	.079	-2.19	-.1219	.0479	.0323	.0096	.0122	-.0283
.080	.079	-.09	-.1387	.0468	.0319	.0111	.0124	-.0307
.080	.079	2.02	-.1753	.0445	.0392	.0140	.0122	-.0298
.080	.079	4.14	-.1909	.0403	.0469	.0171	.0121	-.0294
.080	.079	6.25	-.2051	.0343	.0497	.0185	.0107	-.0262
.080	.079	8.37	-.2091	.0231	.0586	.0196	.0094	-.0220
.080	.079	10.47	-.1783	.0141	.0370	.0172	.0062	-.0157
.080	.079	12.56	-.1190	.0115	.0395	.0134	.0046	-.0101
.080	.079	14.66	-.0680	.0104	.0249	.0094	.0020	-.0032
.080	.079	16.73	-.0618	.0039	.0248	.0076	.0012	-.0002
.080	.079	18.80	-.0781	-.0037	.0318	.0102	.0017	.0008
.080	.079	20.82	-.0402	-.0017	.0408	.0048	.0013	.0040
.080	.079	23.90	-.0237	.0012	.0323	.0031	.0009	.0087
.096	.103	-2.19	-.1305	.0649	.0343	.0206	.0163	-.0368
.096	.103	-.09	-.1425	.0645	.0318	.0221	.0166	-.0379
.096	.103	2.01	-.1794	.0623	.0395	.0270	.0158	-.0388
.096	.103	4.11	-.2143	.0582	.0486	.0335	.0150	-.0374
.096	.103	6.24	-.2240	.0518	.0530	.0375	.0127	-.0363
.096	.103	8.36	-.2343	.0397	.0667	.0419	.0102	-.0328
.096	.103	10.46	-.2101	.0273	.0533	.0376	.0062	-.0262
.096	.103	12.57	-.1463	.0229	.0479	.0292	.0043	-.0187
.096	.103	14.65	-.1137	.0154	.0364	.0216	.0024	-.0117
.096	.103	16.74	-.0788	.0168	.0376	.0166	.0017	-.0072
.096	.103	18.80	-.1167	.0011	.0570	.0238	.0004	-.0062
.096	.103	20.82	-.0608	-.0214	.0531	.0145	.0022	-.0043
.096	.103	23.90	-.0465	.0100	.0437	.0129	.0023	-.0016

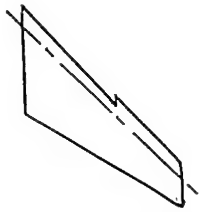


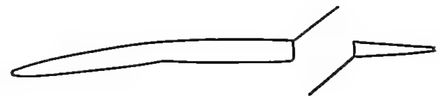


(a) Plain leading edge.

Table 6. Incremental aerodynamic coefficients. $y/(b/2) = .25$ $M = .85$

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.029	.031	-2.12	-.0353	.0150	.0041	.0013	.0039	-.0054
.029	.031	-.00	-.0463	.0139	.0104	.0048	.0035	-.0077
.029	.031	2.12	-.0753	.0111	.0152	.0084	.0031	-.0066
.029	.031	4.26	-.0652	.0082	.0200	.0106	.0023	-.0056
.029	.031	6.38	-.0809	.0024	.0069	.0098	.0013	-.0037
.029	.031	8.53	-.0480	.0026	.0171	.0088	.0002	-.0015
.029	.031	10.63	-.0433	-.0007	.0155	.0078	-.0003	-.0006
.029	.031	12.70	-.0308	-.0036	.0116	.0053	-.0010	.0010
.029	.031	14.76	-.0349	-.0056	.0104	.0048	-.0014	.0024
.029	.031	16.82	-.0279	-.0056	.0074	.0035	-.0011	.0029
.029	.031	18.85	-.0273	-.0071	.0050	.0032	-.0017	.0050
.029	.031	20.89	-.0150	-.0184	.0138	.0025	-.0012	.0049
.049	.049	-2.13	-.0509	.0256	.0073	.0061	.0067	-.0112
.049	.049	-.02	-.0699	.0248	.0144	.0097	.0064	-.0139
.049	.049	2.10	-.1019	.0214	.0198	.0148	.0058	-.0132
.049	.049	4.23	-.1077	.0166	.0293	.0189	.0045	-.0115
.049	.049	6.36	-.1131	.0101	.0150	.0186	.0032	-.0081
.049	.049	8.50	-.0842	.0061	.0223	.0167	.0010	-.0050
.049	.049	10.63	-.0595	.0032	.0182	.0122	.0006	-.0035
.049	.049	12.70	-.0435	-.0009	.0150	.0094	-.0006	.0007
.049	.049	14.76	-.0428	-.0052	.0127	.0071	-.0011	.0031
.049	.049	16.83	-.0282	-.0031	.0097	.0058	-.0013	.0047
.049	.049	18.85	-.0352	-.0078	.0058	.0046	-.0015	.0057
.049	.049	20.89	-.0198	-.0044	.0138	.0044	-.0016	.0074
.080	.079	-2.15	-.0897	.0479	.0222	.0131	.0120	-.0262
.080	.079	-.04	-.1162	.0470	.0322	.0191	.0117	-.0271
.080	.079	2.06	-.1638	.0437	.0394	.0245	.0110	-.0277
.080	.079	4.19	-.1669	.0377	.0498	.0304	.0094	-.0264
.080	.079	6.33	-.1823	.0266	.0355	.0308	.0069	-.0216
.080	.079	8.46	-.1435	.0233	.0403	.0244	.0035	-.0151
.080	.079	10.59	-.1141	.0108	.0290	.0188	.0031	-.0133
.080	.079	12.68	-.0754	.0068	.0259	.0160	.0015	-.0072
.080	.079	14.77	-.0601	.0036	.0253	.0121	.0011	-.0036
.080	.079	16.82	-.0530	.0007	.0228	.0094	.0014	-.0019
.080	.079	18.64	-.0471	-.0018	.0125	.0069	.0026	-.0022
.080	.079	20.87	-.0504	-.0065	.0299	.0079	.0005	.0026
.096	.103	-2.15	-.0907	.0664	.0174	.0128	.0167	-.0340
.096	.103	-.05	-.1285	.0661	.0288	.0105	.0174	-.0370
.096	.103	2.05	-.1829	.0626	.0390	.0145	.0169	-.0374
.096	.103	4.17	-.2019	.0541	.0508	.0180	.0156	-.0338
.096	.103	6.30	-.2164	.0411	.0398	.0353	.0105	-.0275
.096	.103	8.45	-.1730	.0298	.0448	.0295	.0060	-.0184
.096	.103	10.58	-.1259	.0229	.0284	.0217	.0054	-.0156
.096	.103	12.66	-.1228	.0112	.0370	.0230	.0032	-.0099
.096	.103	14.75	-.0992	.0111	.0367	.0198	.0023	-.0044
.096	.103	16.82	-.0795	.0117	.0336	.0174	.0023	-.0019
.096	.103	18.84	-.0857	.0010	.0404	.0147	.0028	-.0027
.096	.103	20.86	-.0639	.0062	.0401	.0151	.0018	.0025

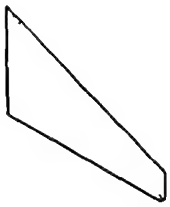




(b) Modified leading edge.

Table 6. Concluded.

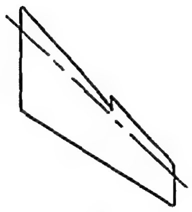
δ	δ	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.011	.011	-2.15	-.0314	.0052	.0046	.0026	.0013	-.0037
.011	.011	-.03	-.0379	.0045	.0056	.0032	.0011	-.0059
.011	.011	2.11	-.0425	.0040	.0080	.0045	.0010	-.0050
.011	.011	4.24	-.0575	.0019	.0117	.0059	.0007	-.0039
.011	.011	6.38	-.0494	.0040	.0137	.0065	-.0000	-.0026
.011	.011	8.49	-.0329	.0012	.0132	.0040	-.0008	-.0002
.011	.011	10.59	-.0085	.0060	.0054	.0033	-.0011	.0022
.011	.011	12.67	-.0094	.0040	.0066	.0019	-.0009	.0034
.011	.011	14.73	-.0036	.0043	.0036	.0014	-.0009	.0038
.011	.011	16.81	-.0119	.0108	.0070	.0021	-.0015	.0036
.011	.011	18.87	.0063	.0170	.0073	.0000	-.0008	.0033
.011	.011	20.88	-.0063	.0198	.0055	.0008	-.0017	.0045
.029	.031	-2.17	-.0453	.0138	.0044	.0039	.0034	-.0041
.029	.031	-.05	-.0615	.0131	.0068	.0056	.0035	-.0065
.029	.031	2.10	-.0601	.0123	.0146	.0086	.0031	-.0067
.029	.031	4.22	-.0980	.0085	.0203	.0119	.0026	-.0066
.029	.031	6.34	-.0938	.0081	.0201	.0127	.0016	-.0054
.029	.031	8.47	-.0639	.0045	.0169	.0108	-.0000	-.0022
.029	.031	10.57	-.0391	.0028	.0121	.0073	-.0006	-.0002
.029	.031	12.66	-.0297	.0035	.0101	.0042	-.0004	.0017
.029	.031	14.74	-.0198	.0020	.0065	.0038	-.0007	.0019
.029	.031	16.80	-.0364	.0053	.0093	.0042	-.0011	.0026
.029	.031	18.88	-.0044	.0004	.0086	.0018	-.0000	.0025
.029	.031	20.91	.0052	.0226	.0087	.0013	.0005	.0028
.049	.049	-2.16	-.0653	.0257	.0109	.0092	.0066	-.0162
.049	.049	-.05	-.0699	.0247	.0120	.0107	.0063	-.0167
.049	.049	2.06	-.1034	.0239	.0200	.0152	.0059	-.0157
.049	.049	4.19	-.1304	.0188	.0304	.0208	.0052	-.0154
.049	.049	6.33	-.1228	.0179	.0309	.0236	.0036	-.0124
.049	.049	8.46	-.0854	.0132	.0266	.0218	-.0004	-.0087
.049	.049	10.57	-.0585	.0116	.0152	.0158	.0001	-.0053
.049	.049	12.66	-.0342	.0120	.0153	.0094	.0001	-.0025
.049	.049	14.74	-.0340	.0053	.0132	.0071	-.0006	-.0002
.049	.049	16.80	-.0471	.0084	.0208	.0057	-.0013	.0017
.049	.049	18.87	-.0079	.0148	.0018	.0109	-.0020	.0018
.049	.049	20.93	.0199	.0341	.0178	.0.030	-.0001	.0019
.080	.079	-2.19	-.1130	.0487	.0317	.0177	.0121	-.0273
.080	.079	-.10	-.1406	.0478	.0322	.0206	.0119	-.0302
.080	.079	2.02	-.1774	.0458	.0419	.0257	.0114	-.0293
.080	.079	4.15	-.2092	.0411	.0526	.0320	.0105	-.0290
.080	.079	6.29	-.2113	.0355	.0570	.0350	.0082	-.0247
.080	.079	8.40	-.1902	.0242	.0581	.0372	.0052	-.0189
.080	.079	10.52	-.1481	.0166	.0469	.0275	.0024	-.0126
.080	.079	12.62	-.1169	.0109	.0449	.0219	.0016	-.0085
.080	.079	14.71	-.07-4	.0101	.0281	.0152	.0004	-.0024
.080	.079	16.75	-.0750	.0120	.0091	.0131	-.0004	.0013
.080	.079	18.81	-.0281	.0176	-.0083	.0157	-.0002	.0016
.080	.079	20.87	-.0214	.0261	.0061	.0044	.0030	.0024
.096	.103	-2.20	-.1165	.0654	.0309	.0195	.0164	-.0378
.096	.103	-.10	-.1428	.0654	.0300	.0220	.0166	-.0384
.096	.103	2.01	-.1896	.0639	.0417	.0275	.0161	-.0379
.096	.103	4.14	-.2359	.0583	.0553	.0347	.0153	-.0380
.096	.103	6.26	-.2480	.0518	.0595	.0394	.0125	-.0347
.096	.103	8.39	-.2260	.0397	.0648	.0434	.0091	-.0290
.096	.103	10.50	-.1841	.0309	.0574	.0359	.0055	-.0227
.096	.103	12.61	-.1357	.0246	.0424	.0273	.0038	-.0148
.096	.103	14.70	-.1080	.0189	.0366	.0213	.0025	-.0098
.096	.103	16.79	-.0998	.0225	.0404	.0171	.0019	-.0059
.096	.103	18.86	-.0761	.0235	.0463	.0147	.0035	-.0049
.096	.103	20.90	-.0539	.0313	.0457	.0133	.0041	-.0049



(a) Plain leading edge.

Table 7. Incremental aerodynamic coefficients. $\frac{y_i}{b/2}=.25$ $M=.90$

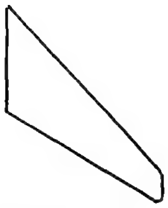
δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.029	.031	- 2.13	-.0307	.0160	.0051	.0008	.0041	-.0064
.029	.031	.01	-.0507	.0146	.0116	.0048	.0037	-.0079
.029	.031	2.13	-.0701	.0119	.0242	.0092	.0032	-.0075
.029	.031	4.27	-.0831	.0077	.0295	.0121	.0025	-.0061
.029	.031	6.41	-.0658	.0035	.0258	.0110	.0012	-.0035
.029	.031	8.54	-.0531	-.0070	.0237	.0083	-.0000	-.0012
.029	.031	10.66	-.0388	-.0060	.0237	.0057	-.0007	.0006
.029	.031	12.73	-.0333	-.0039	.0162	.0038	-.0005	.0006
.029	.031	14.80	-.0126	-.0000	.0140	.0037	-.0008	.0029
.049	.049	- 2.14	-.0597	.0275	.0090	.0051	.0070	-.0122
.049	.049	- .02	-.0797	.0258	.0172	.0105	.0066	-.0139
.049	.049	2.11	-.1062	.0229	.0315	.0163	.0061	-.0135
.049	.049	4.24	-.1328	.0159	.0409	.0207	.0048	-.0120
.049	.049	6.39	-.1217	.0077	.0451	.0209	.0031	-.0092
.049	.049	8.51	-.0890	-.0023	.0296	.0162	.0011	-.0048
.049	.049	10.64	-.0708	-.0052	.0334	.0124	-.0003	-.0008
.049	.049	12.73	-.0212	.0060	.0141	.0090	.0001	.0002
.049	.049	14.81	-.0263	-.0010	.0247	.0062	-.0004	.0024
.080	.079	- 2.15	-.0893	.0495	.0216	.0116	.0120	-.0263
.080	.079	- .04	-.1208	.0486	.0333	.0184	.0117	-.0275
.080	.079	2.08	-.1622	.0452	.0478	.0247	.0111	-.0283
.080	.079	4.21	-.1897	.0370	.0632	.0578	.0061	-.0251
.080	.079	6.34	-.1938	.0256	.0671	.0339	.0069	-.0220
.080	.079	8.46	-.1396	.0107	.0444	.0256	.0033	-.0130
.080	.079	10.61	-.1189	.0061	.0467	.0199	.0027	-.0119
.080	.079	12.71	-.0778	.0097	.0387	.0174	.0018	-.0073
.080	.079	14.79	-.0694	.0036	.0401	.0142	.0008	-.0030
.096	.103	- 2.16	-.0865	.0684	.0162	.0110	.0168	-.0354
.096	.103	- .04	-.1282	.0687	.0311	.0196	.0168	-.0370
.096	.103	2.06	-.1824	.0637	.0481	.0265	.0159	-.0378
.096	.103	4.19	-.2243	.0550	.0635	.0345	.0139	-.0338
.096	.103	6.32	-.2260	.0398	.0728	.0372	.0104	-.0280
.096	.103	8.47	-.1738	.0212	.0523	.0307	.0060	-.0189
.096	.103	10.59	-.1438	.0148	.0429	.0225	.0046	-.0126
.096	.103	12.69	-.1098	.0180	.0427	.0232	.0039	-.0093
.096	.103	14.78	-.1021	.0131	.0482	.0208	.0029	-.0049



(b) Modified leading edge.

Table 7. Concluded.

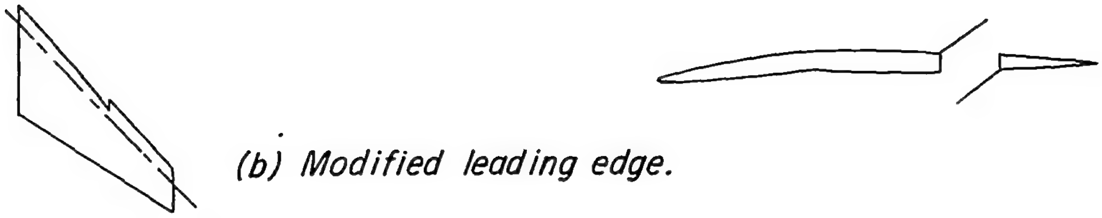
δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.011	.011	-2.17	-.0383	.0061	.0084	.0024	.0012	-.0040
.011	.011	-.04	-.0453	.0049	.0095	.0040	.0012	-.0058
.011	.011	2.11	-.0544	.0032	.0160	.0056	.0010	-.0047
.011	.011	4.26	-.0531	.0010	.0193	.0073	.0003	-.0030
.011	.011	6.39	-.0514	.0053	.0223	.0074	-.0007	-.0005
.011	.011	8.49	-.0308	.0057	.0053	.0046	-.0011	.0009
.011	.011	10.60	-.0214	.0037	.0067	.0017	-.0007	.0023
.011	.011	12.70	.0045	.0041	-.0160	.0013	-.0025	.0032
.011	.011	14.80	.0081	.0064	-.0033	-.0040	-.0007	.0033
.029	.031	-2.19	-.0568	.0140	.0074	.0034	.0036	-.0045
.029	.031	-.06	-.0692	.0253	.0097	.0057	.0037	-.0070
.029	.031	2.07	-.1003	.0096	.0182	.0097	.0033	-.0069
.029	.031	4.28	-.1174	.0035	.0371	.0135	.0025	-.0066
.029	.031	6.35	-.1146	.0045	.0427	.0144	.0008	-.0028
.029	.031	8.46	-.0703	.0066	.0076	.0107	-.0007	-.0001
.029	.031	10.58	-.0494	.0054	.0064	.0041	.0002	.0013
.029	.031	12.69	-.0171	.0012	-.0067	-.0026	.0004	.0034
.029	.031	14.80	.0002	.0049	-.0103	-.0040	-.0000	.0025
.049	.049	-2.18	-.0687	.0278	.0155	.0077	.0067	-.0151
.049	.049	-.07	-.0842	.0262	.0163	.0105	.0066	-.0157
.049	.049	2.07	-.1249	.0227	.0318	.0162	.0061	-.0157
.049	.049	4.21	-.1491	.0163	.0506	.0224	.0051	-.0144
.049	.049	6.35	-.1473	.0154	.0565	.0250	.0026	-.0095
.049	.049	8.47	-.1102	.0132	.0365	.0234	-.0005	-.0045
.049	.049	10.59	-.0763	.0092	.0257	.0115	-.0001	-.0026
.049	.049	12.70	-.0342	.0069	.0040	.0024	-.0000	.0004
.049	.049	14.75	-.0433	.0024	-.0114	-.0016	.0002	.0006
.080	.079	-2.21	-.1110	.0508	.0316	.0153	.0119	-.0290
.080	.079	-.09	-.1406	.0494	.0355	.0201	.0119	-.0299
.080	.079	2.04	-.1932	.0463	.0524	.0258	.0113	-.0296
.080	.079	4.17	-.2344	.0402	.0746	.0351	.0104	-.0291
.080	.079	6.30	-.2400	.0331	.0864	.0386	.0072	-.0218
.080	.079	8.43	-.2043	.0225	.0714	.0375	.0035	-.0139
.080	.079	10.53	-.1588	.0149	.0483	.0259	.0023	-.0109
.080	.079	12.63	-.1187	.0033	.0142	.0200	.0015	-.0065
.080	.079	14.83	-.0693	.0132	.0661	.0081	.0011	-.0020
.096	.103	-2.21	-.1107	.0678	.0300	.0165	.0163	-.0367
.096	.103	-.10	-.1423	.0678	.0317	.0206	.0168	-.0382
.096	.103	2.01	-.2094	.0636	.0507	.0274	.0160	-.0382
.096	.103	4.15	-.2543	.0566	.0770	.0368	.0150	-.0379
.096	.103	6.27	-.2807	.0492	.0914	.0422	.0116	-.0325
.096	.103	8.40	-.2419	.0395	.0759	.0460	.0077	-.0250
.096	.103	10.52	-.2034	.0271	.0622	.0337	.0052	-.0210
.096	.103	12.63	-.1495	.0150	.0284	.0247	.0043	-.0144
.096	.103	14.74	-.1208	.0181	.0250	.0157	.0030	-.0086



(a) Plain leading edge.

Table 8. Incremental aerodynamic coefficients. $y_i/_{b/2} = .25$ $M = .94$

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_n	ΔC_l	ΔC_Y
.029	.031	-2.12	-.0222	.0166	.0024	-.0008	.0042	-.0057
.029	.031	.01	-.0554	.0156	.0159	.0047	.0040	-.0080
.029	.031	2.13	-.0800	.0124	.0293	.0109	.0033	-.0080
.029	.031	4.27	-.0754	.0065	.0372	.0137	.0021	-.0052
.029	.031	6.40	-.0623	.0053	.0258	.0116	.0004	-.0022
.029	.031	8.52	-.0453	.0002	.0169	.0066	-.0003	-.0003
.029	.031	10.63	-.0130	.0056	-.0031	.0090	-.0010	.0020
.049	.049	-2.11	-.0200	.0273	.0088	.0035	.0071	-.0122
.049	.049	-.02	-.0856	.0268	.0235	.0106	.0068	-.0141
.049	.049	2.11	-.1143	.0226	.0419	.0173	.0061	-.0145
.049	.049	4.25	-.1256	.0151	.0538	.0216	.0044	-.0104
.049	.049	6.38	-.1090	.0099	.0452	.0230	.0025	-.0069
.049	.049	8.52	-.0723	.0073	.0333	.0163	.0010	-.0041
.049	.049	10.65	-.0704	.0009	.0405	.0145	-.0007	-.0001
.080	.079	-2.15	-.0734	.0523	.0178	.0097	.0125	-.0263
.080	.079	-.03	-.1188	.0505	.0362	.0176	.0119	-.0286
.080	.079	2.06	-.1643	.0447	.0557	.0247	.0110	-.0287
.080	.079	4.21	-.1887	.0370	.0759	.0329	.0095	-.0264
.080	.079	6.36	-.1802	.0255	.0760	.0358	.0066	-.0212
.080	.079	8.48	-.1282	.0205	.0431	.0271	.0036	-.0131
.080	.079	10.62	-.1067	.0161	.0461	.0276	.0016	-.0090
.096	.103	-2.16	-.0727	.0699	.0140	.0105	.0168	-.0364
.096	.103	-.04	-.1323	.0702	.0346	.0193	.0167	-.0370
.096	.103	2.07	-.1854	.0674	.0561	.0277	.0162	-.0375
.096	.103	4.19	-.2080	.0607	.0732	.0366	.0143	-.0364
.096	.103	6.34	-.2090	.0405	.0786	.0384	.0100	-.0277
.096	.103	8.47	-.1579	.0291	.0537	.0314	.0062	-.0192
.096	.103	10.58	-.1757	.0111	.0742	.0229	.0043	-.0188



(b) Modified leading edge.

Table 8. Concluded.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_n	ΔC_l	ΔC_Y
.011	.011	-2.16	-.0359	.0057	.0080	.0022	.0016	-.0036
.011	.011	-.03	-.0467	.0045	.0169	.0055	.0014	-.0064
.011	.011	2.10	-.0518	-.0011	.0243	.0076	.0007	-.0052
.011	.011	4.24	-.0496	.0010	.0244	.0084	-.0003	-.0019
.011	.011	6.36	-.0404	.0003	.0162	.0077	-.0010	-.0005
.011	.011	8.46	-.0286	.0009	-.0006	.0053	-.0011	.0019
.011	.011	10.57	-.0121	-.0002	-.0214	.0064	-.0016	.0027
.029	.031	-2.19	-.0470	.0141	.0047	.0024	.0039	-.0053
.029	.031	-.05	-.0617	.0123	.0145	.0067	.0039	-.0071
.029	.031	2.08	-.0919	.0051	.0330	.0104	.0033	-.0073
.029	.031	4.21	-.0962	.0027	.0437	.0146	.0020	-.0047
.029	.031	6.34	-.1009	.0013	.0348	.0147	-.0001	-.0018
.029	.031	8.45	-.0913	-.0054	.0280	.0117	-.0006	.0006
.029	.031	10.54	-.0366	.0023	-.0251	.0132	-.0015	.0026
.049	.049	-2.18	-.0505	.0262	.0087	.0068	.0070	-.0149
.049	.049	-.06	-.0833	.0277	.0220	.0110	.0070	-.0165
.049	.049	2.07	-.1157	.0189	.0448	.0170	.0061	-.0163
.049	.049	4.22	-.1291	.0135	.0597	.0228	.0046	-.0130
.049	.049	6.34	-.1271	.0078	.0566	.0251	.0019	-.0084
.049	.049	8.45	-.1202	.0004	.0524	.0220	-.0007	-.0024
.049	.049	10.57	-.0769	.0023	.0177	.0193	-.0013	-.0018
.080	.079	-2.20	-.0904	.0537	.0230	.0140	.0128	-.0298
.080	.079	-.09	-.1261	.0536	.0368	.0191	.0125	-.0329
.080	.079	2.03	-.1797	.0488	.0608	.0263	.0121	-.0313
.080	.079	4.17	-.2103	.0408	.0840	.0345	.0105	-.0283
.080	.079	6.30	-.2009	.0327	.0772	.0377	.0065	-.0197
.080	.079	8.42	-.1924	.0136	.0839	.0369	.0028	-.0115
.080	.079	10.51	-.1592	.0111	.0302	.0329	.0011	-.0079
.096	.103	-2.21	-.0953	.0717	.0220	.0156	.0172	-.0374
.096	.103	-.10	-.1367	.0716	.0356	.0208	.0173	-.0400
.096	.103	2.02	-.1979	.0664	.0609	.0284	.0166	-.0415
.096	.103	4.14	-.2398	.0628	.0848	.0376	.0154	-.0404
.096	.103	6.27	-.2378	.0494	.0817	.0424	.0111	-.0325
.096	.103	8.39	-.2328	.0340	.0876	.0449	.0080	-.0229

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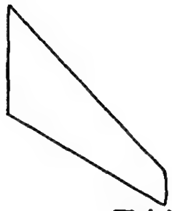
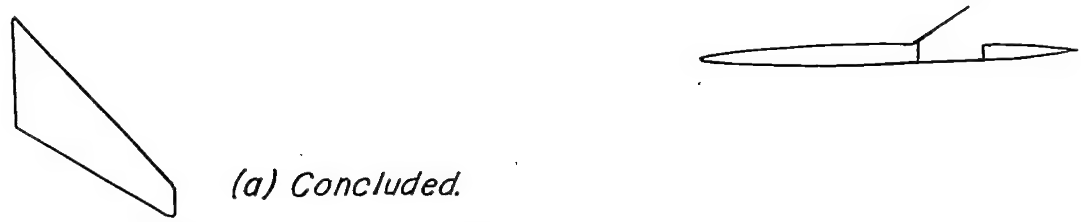


(a) Plain leading edge.

Table 9. Incremental aerodynamic coefficients. $y_i/_{b/2} = .25$

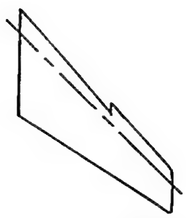
δ_s	δ_d	a	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
M=.40								
.080	.000	- 2.06	-.0678	.0214	.0006	.0087	.0063	-.0076
.080	.000	.00	-.0254	.0188	.0068	.0126	.0063	-.0082
.080	.000	2.04	-.0499	.0183	.0100	.0145	.0064	-.0092
.080	.000	4.10	-.0636	.0156	.0139	.0184	.0054	-.0091
.080	.000	6.17	-.0410	.0154	.0122	.0179	.0046	-.0054
.080	.000	8.24	-.0189	.0115	.0005	.0119	.0031	-.0044
.080	.000	10.29	-.0241	.0089	-.0000	.0090	.0022	-.0014
.080	.000	12.34	-.0183	.0062	.0025	.0074	.0008	.0016
.080	.000	14.36	-.0122	.0026	.0021	.0048	-.0005	.0044
.080	.000	16.42	-.0019	.0004	.0006	.0043	-.0010	.0106
.080	.000	18.44	-.0469	-.0143	-.0080	.0034	-.0021	.0136
.080	.000	20.45	-.0437	-.0208	-.0029	.0013	-.0027	.0167
.080	.000	23.45	-.0846	-.0401	-.0044	.0030	-.0052	.0184
M=.60								
.080	.000	- 2.08	-.0472	.0198	.0097	.0136	.0058	-.0087
.080	.000	- .01	-.0599	.0197	.0128	.0158	.0058	-.0092
.080	.000	2.07	-.0701	.0185	.0160	.0181	.0056	-.0102
.080	.000	4.15	-.0840	.0145	.0204	.0205	.0044	-.0100
.080	.000	6.25	-.0664	.0135	.0150	.0199	.0036	-.0077
.080	.000	8.34	-.0506	.0059	.0004	.0143	.0017	-.0021
.080	.000	10.44	-.0394	.0031	-.0038	.0085	.0008	-.0000
.080	.000	12.52	-.0274	.0016	-.0022	.0054	.0002	.0033
.080	.000	14.60	-.0074	.0007	-.0022	.0034	-.0007	.0066
.080	.000	16.64	-.0247	-.0071	-.0051	.0031	-.0017	.0105
.080	.000	18.63	-.0136	-.0062	-.0032	.0006	-.0022	.0145
.080	.000	20.63	-.0105	-.0068	-.0038	.0014	-.0034	.0135
.080	.000	23.70	-.0036	-.0036	-.0039	.0025	-.0044	.0133
M=.70								
.080	.000	- 2.11	-.0618	.0195	.0127	.0149	.0056	-.0093
.080	.000	- .02	-.0740	.0189	.0148	.0172	.0055	-.0097
.080	.000	2.07	-.0861	.0173	.0187	.0191	.0053	-.0095
.080	.000	4.17	-.0990	.0128	.0229	.0220	.0039	-.0090
.080	.000	6.29	-.0816	.0104	.0163	.0198	.0030	-.0065
.080	.000	8.40	-.0628	.0034	.0026	.0144	.0009	-.0009
.080	.000	10.50	-.0569	-.0025	-.0082	.0061	.0006	.0012
.080	.000	12.60	-.0314	-.0012	-.0031	.0053	-.0002	.0041
.080	.000	14.67	-.0153	-.0029	-.0051	.0026	-.0010	.0086
.080	.000	16.71	-.0067	-.0026	-.0077	.0021	-.0021	.0111
.080	.000	18.70	.0049	-.0013	-.0053	.0003	-.0019	.0132
.080	.000	20.72	-.0101	-.0055	-.0049	.0017	-.0038	.0124
.080	.000	23.78	-.0202	-.0108	-.0017	.0021	-.0042	.0138



(a) Concluded.

Table 9. Continued.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
				M=.81				
.080	.000	-2.12	-.0722	.0200	.0205	.0167	.0057	-.0092
.080	.000	-.02	-.0855	.0191	.0246	.0188	.0055	-.0105
.080	.000	2.09	-.0959	.0179	.0267	.0208	.0052	-.0110
.080	.000	4.20	-.1049	.0135	.0321	.0233	.0039	-.0098
.080	.000	6.33	-.0921	.0091	.0236	.0202	.0026	-.0065
.080	.000	8.46	-.0872	.0018	.0170	.0148	.0001	-.0020
.080	.000	10.57	-.0242	.0025	-.0059	.0032	.0004	.0008
.080	.000	12.68	-.0217	-.0023	.0057	.0042	-.0007	.0038
.080	.000	14.75	-.0059	-.0016	-.0008	.0021	-.0013	.0081
.080	.000	16.80	-.0057	-.0025	-.0022	.0008	-.0016	.0096
.080	.000	18.79	-.0066	-.0046	-.0004	.0003	-.0017	.0100
.080	.000	20.82	-.0151	-.0077	.0010	.0007	-.0022	.0093
.080	.000	23.90	-.0069	-.0043	-.0073	.0023	-.0043	.0167
				M=.85				
.080	.000	-2.15	-.0829	.0205	.0232	.0178	.0059	-.0104
.080	.000	-.03	-.0955	.0196	.0264	.0197	.0056	-.0112
.080	.000	2.09	-.1230	.0171	.0282	.0222	.0053	-.0110
.080	.000	4.21	-.1283	.0127	.0344	.0247	.0040	-.0100
.080	.000	6.35	-.1208	.0065	.0157	.0222	.0021	-.0055
.080	.000	8.47	-.1032	-.0011	.0202	.0139	-.0002	.0001
.080	.000	10.60	-.0512	-.0025	-.0015	.0027	.0004	.0013
.080	.000	12.70	-.0149	-.0023	.0032	.0035	-.0007	.0052
.080	.000	14.77	-.0211	-.0072	.0017	.0018	-.0015	.0087
.080	.000	16.82	-.0111	-.0047	-.0012	.0010	-.0016	.0094
.080	.000	18.85	-.0111	-.0120	-.0063	.0014	-.0030	.0108
.080	.000	20.88	-.0062	-.0041	-.0010	.0004	-.0020	.0113
				M=.90				
.080	.000	-2.15	-.0953	.0217	.0292	.0194	.0061	-.0111
.080	.000	-.04	-.1101	.0204	.0303	.0216	.0057	-.0117
.080	.000	2.10	-.1286	.0184	.0392	.0243	.0055	-.0118
.080	.000	4.23	-.1422	.0134	.0430	.0276	.0042	-.0096
.080	.000	6.37	-.1378	.0036	.0438	.0246	.0024	-.0061
.080	.000	8.51	-.0778	-.0042	.0187	.0157	-.0003	.0007
.080	.000	10.63	-.0550	-.0088	.0137	.0046	-.0004	.0025
.080	.000	12.72	-.0171	-.0020	.0080	.0027	-.0002	.0038
.080	.000	14.79	-.0135	-.0046	.0069	.0005	-.0007	.0073
				M=.94				
.080	.000	-2.13	-.0873	.0280	.0364	.0191	.0071	-.0118
.080	.000	-.03	-.1147	.0260	.0381	.0226	.0065	-.0134
.080	.000	2.10	-.1303	.0225	.0415	.0248	.0061	-.0133
.080	.000	4.24	-.1263	.0187	.0450	.0269	.0049	-.0125
.080	.000	6.37	-.1218	.0062	.0479	.0271	.0022	-.0096
.080	.000	8.49	-.0364	.0125	-.0086	.0167	.0012	-.0032
.080	.000	10.62	-.0286	.0067	.0001	.0113	-.0000	.0030




(b) Modified leading edge.

Table 9. Continued.

δ_s	δ_d	a	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
				$M = .40$				
.080	.000	-2.06	-.0481	.0242	.0064	.0113	.0062	-.0165
.080	.000	-.02	-.0493	.0221	.0050	.0115	.0058	-.0191
.080	.000	2.04	-.0454	.0225	.0068	.0138	.0056	-.0188
.080	.000	4.09	-.0653	.0197	.0097	.0161	.0056	-.0198
.080	.000	6.13	-.0839	.0157	.0133	.0196	.0045	-.0197
.080	.000	8.19	-.0885	.0106	.0151	.0211	.0032	-.0174
.080	.000	10.26	-.0530	.0113	.0073	.0161	.0028	-.0168
.080	.000	12.32	-.0432	.0061	.0016	.0116	.0014	-.0181
.080	.000	14.38	.0051	.0061	.0009	.0046	.0004	-.0092
.080	.000	16.41	.0213	.0058	-.0008	.0037	-.0015	-.0025
.080	.000	18.43	-.0104	-.0048	-.0027	.0022	-.0021	-.0005
.080	.000	20.47	-.0137	-.0093	-.0067	.0002	-.0027	.0026
.080	.000	23.49	-.0173	-.0102	-.0035	.0023	-.0037	.0039
				$M = .60$				
.080	.000	-2.11	-.0528	.0234	.0116	.0135	.0067	-.0130
.080	.000	-.04	-.0629	.0209	.0116	.0151	.0057	-.0179
.080	.000	2.05	-.0732	.0206	.0160	.0179	.0056	-.0149
.080	.000	4.12	-.0979	.0188	.0200	.0204	.0052	-.0162
.080	.000	6.21	-.0862	.0155	.0185	.0218	.0037	-.0166
.080	.000	8.29	-.1026	.0092	.0237	.0225	.0023	-.0154
.080	.000	10.40	-.0616	.0099	.0143	.0150	.0018	-.0138
.080	.000	12.46	-.0358	.0029	.0064	.0071	.0008	-.0086
.080	.000	14.55	-.0002	.0036	.0051	.0034	-.0007	-.0025
.080	.000	16.60	-.0101	-.0020	.0026	.0023	-.0017	.0008
.080	.000	18.63	-.0118	-.0039	.0019	.0010	-.0023	.0029
.080	.000	20.68	-.0061	-.0068	.0109	-.0007	-.0022	.0059
.080	.000	23.70	.0106	-.0019	.0031	.0003	-.0024	.0022
				$M = .70$				
.080	.000	-2.15	-.0800	.0242	.0153	.0153	.0068	-.0140
.080	.000	-.05	-.0708	.0208	.0159	.0172	.0057	-.0174
.080	.000	2.04	-.1060	.0188	.0190	.0194	.0052	-.0154
.080	.000	4.13	-.1163	.0168	.0230	.0223	.0049	-.0143
.080	.000	6.25	-.1112	.0147	.0248	.0228	.0034	-.0144
.080	.000	8.35	-.1177	.0154	.0301	.0231	.0020	-.0130
.080	.000	10.47	-.0735	.0047	.0140	.0166	.0008	-.0094
.080	.000	12.54	-.0302	.0049	.0076	.0091	-.0001	-.0043
.080	.000	14.62	-.0320	-.0056	.0049	.0037	-.0010	.0008
.080	.000	16.67	-.0008	.0005	.0010	.0029	-.0021	.0031
.080	.000	18.71	-.0339	-.0103	.0065	.0017	-.0027	.0039
.080	.000	20.74	-.0447	-.0129	.0162	.0031	-.0035	.0053
.080	.000	23.78	-.0088	-.0095	.0026	.0008	-.0021	.0031

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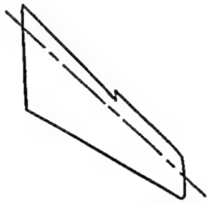

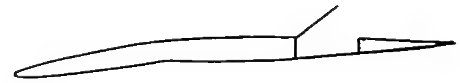

(b) Concluded.

Table 9. Concluded.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
				M = .81				
.080	.000	-2.16	-.0940	.0219	.0209	.0174	.0066	-.0136
.080	.000	-.06	-.0994	.0191	.0218	.0190	.0059	-.0164
.080	.000	2.06	-.1111	.0171	.0266	.0208	.0051	-.0150
.080	.000	4.16	-.1308	.0153	.0288	.0247	.0047	-.0141
.080	.000	6.29	-.13-8	.0128	.0286	.0246	.0033	-.0133
.080	.000	8.40	-.1282	.0057	.0334	.0245	.0018	-.0107
.080	.000	10.52	-.09-1	.0025	.0155	.0182	-.0003	-.0061
.080	.000	12.61	-.04-2	.0030	.0079	.0092	-.0008	-.0009
.080	.000	14.67	-.0169	.0009	-.0103	.0045	-.0019	.0034
.080	.000	16.74	-.0206	-.0015	-.0074	.0019	-.0021	.0043
.080	.000	18.80	-.0210	-.0043	-.0054	.0007	-.0023	.0053
.080	.000	20.82	-.0028	-.0014	.0100	.0018	-.0030	.0048
.080	.000	23.90	.0062	.0018	.0089	-.0006	-.0010	.0033
				M = .85				
.080	.000	-2.20	-.0958	.0224	.0221	.0186	.0068	-.0142
.080	.000	-.00	-.0354	.0198	.0313	.0210	.0061	-.0161
.080	.000	2.04	-.1301	.0175	.0277	.0228	.0052	-.0158
.080	.000	4.17	-.1654	.0143	.0343	.0261	.0048	-.0139
.080	.000	6.30	-.1603	.0379	.0348	.0271	.0031	-.0120
.080	.000	8.43	-.1134	.0068	.0263	.0257	.0006	-.0063
.080	.000	10.56	-.0766	.0048	.0201	.0170	-.0008	-.0037
.080	.000	12.64	-.0333	.0053	.0002	.0077	-.0012	.0004
.080	.000	14.73	-.0081	.0049	-.0059	.0039	-.0018	.0035
.080	.000	16.79	-.0282	.0072	.0071	.0020	-.0021	.0052
.080	.000	18.87	.0002	.0006	.0039	.0009	-.0016	.0053
.080	.000	20.86	-.0036	.0198	-.0053	.0010	-.0018	.0037
				M = .90				
.080	.000	-2.22	-.1238	.0259	.0365	.0209	.0070	-.0143
.080	.000	-.08	-.1292	.0215	.0341	.0229	.0062	-.0170
.080	.000	2.05	-.1637	.0182	.0414	.0251	.0054	-.0160
.080	.000	4.19	-.1856	.0120	.0578	.0288	.0047	-.0141
.080	.000	6.32	-.1786	.0114	.0593	.0300	.0024	-.0103
.080	.000	8.45	-.1346	.0070	.0384	.0279	-.0013	-.0025
.080	.000	10.57	-.0739	.0095	.0169	.0121	-.0009	-.0013
.080	.000	12.65	-.0356	-.0005	-.0259	.0061	-.0007	.0024
.080	.000	14.76	-.0231	-.0029	-.0149	.0029	-.0010	.0020
				M = .94				
.080	.000	-2.21	-.1110	.0262	.0339	.0207	.0075	-.0147
.080	.000	-.08	-.1286	.0219	.0409	.0231	.0063	-.0171
.080	.000	2.05	-.1527	.0147	.0561	.0256	.0055	-.0165
.080	.000	4.18	-.1611	.0119	.0632	.0288	.0049	-.0145
.080	.000	6.32	-.1402	.0094	.0471	.0281	.0021	-.0098
.080	.000	8.45	-.1262	-.0058	.0555	.0246	-.0009	-.0012
.080	.000	10.53	-.0582	.0082	-.0224	.0212	-.0008	-.0012

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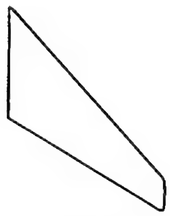
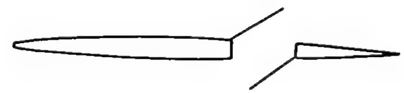
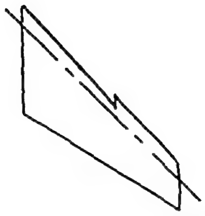


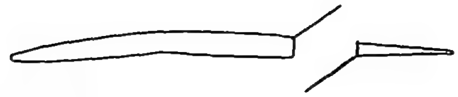


(a) Plain leading edge.

Table 10. Incremental aerodynamic coefficients. $y_i/_{b/2}$ = .47 M = .40

δ_s	δ_d	a	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	- 2.06	-.0306	.0092	-.0052	.0037	.0045	.0087
.028	.029	- .00	-.0207	.0081	.0015	.0056	.0043	.0141
.028	.029	2.04	-.0357	.0059	-.0026	.0064	.0042	.0159
.028	.029	4.09	-.0495	.0036	.0024	.0072	.0036	.0157
.028	.029	6.15	-.0437	-.0140	.0027	.0061	.0031	.0154
.028	.029	8.20	-.0504	-.0018	-.0065	.0072	.0023	.0152
.028	.029	10.27	-.0627	-.0071	.0013	.0070	.0008	.0117
.028	.029	12.31	-.0443	-.0066	-.0002	.0053	.0003	.0106
.028	.029	14.37	-.0405	-.0081	-.0089	.0036	.0004	.0103
.028	.029	16.41	-.0359	-.0079	-.0086	.0033	.0002	.0120
.028	.029	18.44	-.0400	-.0110	-.0029	.0022	.0004	.0101
.028	.029	20.45	-.0317	-.0101	-.0172	.0014	.0002	.0099
.028	.029	23.45	-.0618	-.0267	-.0167	.0004	.0013	.0136
.048	.050	- 2.06	-.0501	.0170	.0053	.0082	.0080	.0109
.048	.050	- .02	-.0264	.0156	.0102	.0106	.0078	.0183
.048	.050	2.04	-.0368	.0143	.0064	.0127	.0076	.0202
.048	.050	4.10	-.0505	.0112	.0114	.0148	.0067	.0183
.048	.050	6.15	-.0445	-.0073	.0117	.0137	.0056	.0169
.048	.050	8.23	-.0414	.0045	.0062	.0118	.0037	.0132
.048	.050	10.27	-.0490	-.0017	.0113	.0101	.0016	.0066
.048	.050	12.33	-.0354	-.0023	.0065	.0074	.0009	.0068
.048	.050	14.37	-.0405	-.0062	-.0029	.0057	.0005	.0046
.048	.050	16.41	-.0539	-.0114	.0020	.0053	.0003	.0062
.048	.050	18.44	-.0538	-.0138	.0019	.0040	.0004	.0061
.048	.050	20.43	-.0626	-.0210	-.0108	.0035	.0003	.0050
.048	.050	23.48	-.0489	-.0196	-.0007	.0012	.0018	.0053
.081	.077	- 2.07	-.0850	.0362	.0327	.0166	.0168	.0424
.081	.077	- .02	-.0664	.0336	.0402	.0193	.0162	.0409
.081	.077	2.03	-.0778	.0322	.0335	.0219	.0162	.0448
.081	.077	4.09	-.0916	.0279	.0415	.0246	.0149	.0446
.081	.077	6.15	-.0945	.0058	.0410	.0257	.0129	.0423
.081	.077	8.21	-.09-6	.0133	.0384	.0240	.0102	.0355
.081	.077	10.26	-.0693	.0052	.0309	.0157	.0053	.0233
.081	.077	12.34	-.0362	.0065	.0274	.0131	.0036	.0196
.081	.077	14.38	-.0408	.0019	.0240	.0108	.0030	.0172
.081	.077	16.43	-.03-8	.0013	.0244	.0107	.0021	.0169
.081	.077	18.47	-.0174	.0046	.0289	.0090	.0020	.0159
.081	.077	20.48	-.0097	.0059	.0146	.0077	.0019	.0139
.081	.077	23.46	-.0146	.0013	.0143	.0059	.0028	.0132
.100	.099	- 2.06	-.1024	.0502	.0406	.0206	.0242	.0736
.100	.099	- .02	-.0805	.0480	.0424	.0230	.0234	.0633
.100	.099	2.03	-.0926	.0457	.0357	.0260	.0234	.0655
.100	.099	4.09	-.1067	.0409	.0467	.0299	.0221	.0655
.100	.099	6.15	-.1095	.0187	.0522	.0317	.0196	.0630
.100	.099	8.14	-.1106	.0194	-.1056	.0276	.0134	.0479
.100	.099	10.19	-.0955	.0098	-.1255	.0220	.0088	.0345
.100	.099	12.33	-.0644	.0089	.0286	.0188	.0069	.0292
.100	.099	14.37	-.0556	.0063	.0203	.0165	.0059	.0276
.100	.099	16.42	-.0602	.0026	.0259	.0158	.0054	.0272
.100	.099	18.45	-.0465	.0033	.0270	.0142	.0049	.0243
.100	.099	20.48	-.0161	.0112	.0175	.0139	.0047	.0234
.100	.099	23.51	-.0029	.0152	.0247	.0127	.0041	.0208

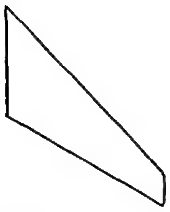




(b) Modified leading edge.

Table 10. Concluded.

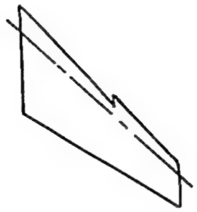
δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.08	-.0142	.0081	.0230	.0063	.0038	.0024
.028	.029	-.02	.0096	.0074	.0187	.0067	.0035	.0026
.028	.029	2.03	-.0080	.0082	.0263	.0081	.0031	.0016
.028	.029	4.09	-.0175	.0080	.0225	.0089	.0030	.0018
.028	.029	6.15	-.0059	.0090	.0383	.0092	.0022	.0041
.028	.029	8.20	-.0123	.0070	.0137	.0086	.0020	.0023
.028	.029	10.27	-.0195	.0037	.0310	.0068	.0013	-.0020
.028	.029	12.32	.0101	.0065	.0302	.0032	-.0004	-.0120
.028	.029	14.38	.0154	.0072	.0306	.0039	-.0005	-.0074
.028	.029	16.40	-.0074	.0003	.0256	.0043	-.0006	-.0049
.028	.029	18.46	.0250	.0112	.0252	.0040	-.0011	-.0049
.028	.029	20.48	-.0154	-.0017	.0280	.0026	-.0013	-.0064
.028	.029	23.51	.0319	.0137	.0110	-.0024	.0006	-.0091
.048	.050	-2.21	-.0431	.0194	-.2681	.0112	.0072	.0146
.048	.050	-.17	-.0387	.0181	-.2739	.0121	.0071	.0220
.048	.050	2.04	-.0316	.0106	.0456	.0139	.0066	.0199
.048	.050	4.10	-.0419	.0168	.0357	.0156	.0065	.0212
.048	.050	6.16	-.0295	.0157	.0576	.0168	.0053	.0234
.048	.050	8.22	-.0301	.0141	.0424	.0166	.0045	.0214
.048	.050	10.27	-.0374	.0080	.0567	.0132	.0035	.0169
.048	.050	12.33	.0112	.0114	.0514	.0087	.0014	.0048
.048	.050	14.38	.0072	.0094	.0388	.0074	-.0000	.0058
.048	.050	16.42	.0078	.0063	.0358	.0080	-.0005	.0066
.048	.050	18.45	-.0099	.0046	.0373	.0076	-.0013	.0062
.048	.050	20.49	.0003	.0064	.0381	.0063	-.0019	.0022
.048	.050	23.51	.0256	.0375	.0322	.0013	.0006	-.0004
.081	.077	-2.11	-.0940	.0381	.0474	.0205	.0161	.0365
.081	.077	-.03	-.0698	.0361	.0583	.0219	.0161	.0449
.081	.077	2.01	-.0839	.0347	.0571	.0246	.0153	.0433
.081	.077	4.07	-.0933	.0323	.0624	.0270	.0151	.0455
.081	.077	6.14	-.0812	.0306	.0842	.0293	.0135	.0461
.081	.077	8.20	-.0822	.0250	.0569	.0300	.0118	.0430
.081	.077	10.26	-.0787	.0176	.0780	.0275	.0094	.0362
.081	.077	12.31	-.0302	.0176	.0574	.0187	.0056	.0182
.081	.077	14.37	-.0413	.0089	.0563	.0179	.0031	.0162
.081	.077	16.41	-.0164	.0113	.0550	.0178	.0018	.0158
.081	.077	18.43	-.0058	-.0034	.0540	.0177	.0001	.0140
.081	.077	20.46	-.0995	-.0201	.0602	.0154	-.0009	.0103
.081	.077	23.49	-.0384	-.0037	.0414	.0095	.0012	.0086
.100	.099	-2.10	-.1021	.0488	.0561	.0236	.0226	.0571
.100	.099	-.05	-.0939	.0484	.0537	.0267	.0233	.0643
.100	.099	2.01	-.1129	.0463	.0583	.0291	.0224	.0642
.100	.099	4.06	-.1327	.0429	.0598	.0325	.0224	.0667
.100	.099	6.11	-.1261	.0397	.0782	.0353	.0207	.0691
.100	.099	8.16	-.1264	.0335	.0570	.0380	.0184	.0651
.100	.099	10.24	-.1231	.0232	.0750	.0346	.0154	.0562
.100	.099	12.29	-.0825	.0177	.0537	.0282	.0101	.0362
.100	.099	14.35	-.0689	.0113	.0605	.0265	.0068	.0328
.100	.099	16.38	-.0905	.0003	.0586	.0264	.0053	.0321
.100	.099	18.42	-.1017	-.0064	.0666	.0256	.0029	.0276
.100	.099	20.44	-.1311	-.0246	.0580	.0237	.0016	.0231
.100	.099	23.46	-.0433	.0005	.0323	.0162	.0029	.0182

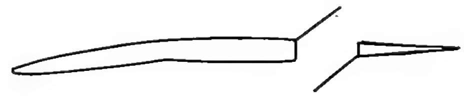


(a) Plain leading edge.

Table II. Incremental aerodynamic coefficients. $\frac{y_i}{b/2} = .47 \quad M = .60$

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	- 2.10	-.0212	.0098	-.0030	.0035	.0044	.0093
.028	.029	- .00	-.0261	.0090	.0027	.0052	.0045	.0130
.028	.029	2.08	-.0282	.0077	.0071	.0067	.0041	.0130
.028	.029	4.17	-.0424	.0051	.0106	.0083	.0036	.0133
.028	.029	6.25	-.0312	.0039	.0100	.0068	.0031	.0129
.028	.029	8.34	-.0425	-.0012	.0046	.0076	.0015	.0104
.028	.029	10.44	-.0326	-.0016	.0053	.0073	.0005	.0086
.028	.029	12.51	-.0430	-.0062	-.0001	.0047	.0006	.0083
.028	.029	14.56	-.0274	-.0044	-.0018	.0033	.0011	.0084
.028	.029	16.62	-.0313	-.0074	-.0023	.0028	.0004	.0085
.028	.029	18.66	-.0154	-.0034	-.0009	.0016	.0007	.0095
.028	.029	20.62	-.0546	-.0191	-.0162	.0008	.0007	.0100
.028	.029	23.69	-.0163	-.0043	-.0026	.0030	-.0017	.0086
.048	.050	- 2.09	-.0270	.0174	.0058	.0079	.0081	.0151
.048	.050	- .02	-.0440	.0166	.0090	.0101	.0080	.0193
.048	.050	2.07	-.0462	.0147	.0118	.0128	.0076	.0186
.048	.050	4.15	-.0572	.0118	.0201	.0155	.0066	.0183
.048	.050	6.25	-.0481	.0090	.0193	.0132	.0055	.0162
.048	.050	8.34	-.0442	.0035	.0150	.0125	.0027	.0112
.048	.050	10.43	-.0417	-.0007	.0075	.0100	.0013	.0070
.048	.050	12.51	-.0418	-.0037	.0074	.0070	.0010	.0057
.048	.050	14.58	-.0352	-.0044	.0050	.0050	.0010	.0054
.048	.050	16.63	-.0256	-.0038	.0042	.0049	.0007	.0054
.048	.050	18.65	-.0214	-.0037	.0016	.0033	.0011	.0063
.048	.050	20.64	-.0439	-.0135	.0043	.0021	.0015	.0071
.048	.050	23.66	-.0267	-.0079	-.0020	.0041	-.0010	.0056
.081	.077	- 2.10	-.0717	.0354	.0328	.0161	.0166	.0424
.081	.077	- .02	-.0754	.0339	.0296	.0192	.0164	.0436
.081	.077	2.07	-.0831	.0322	.0366	.0224	.0160	.0442
.081	.077	4.15	-.0948	.0277	.0403	.0261	.0146	.0434
.081	.077	6.25	-.0924	.0220	.0389	.0258	.0124	.0397
.081	.077	8.34	-.0806	.0122	.0352	.0217	.0077	.0284
.081	.077	10.43	-.0583	.0063	.0262	.0156	.0048	.0200
.081	.077	12.53	-.0561	.0022	.0217	.0121	.0038	.0166
.081	.077	14.59	-.0304	.0048	.0208	.0104	.0033	.0149
.081	.077	16.64	-.0350	.0013	.0203	.0093	.0028	.0146
.081	.077	18.66	-.0222	.0036	.0170	.0077	.0035	.0162
.081	.077	20.65	-.0444	-.0059	.0166	.0078	.0027	.0154
.081	.077	23.70	-.0317	-.0029	.0160	.0092	.0004	.0125
.100	.099	- 2.10	-.0759	.0489	.0343	.0196	.0237	.0589
.100	.099	- .03	-.0898	.0492	.0334	.0231	.0238	.0625
.100	.099	4.14	-.1128	.0417	.0409	.0306	.0218	.0623
.100	.099	6.23	-.1193	.0340	.0449	.0314	.0188	.0568
.100	.099	8.34	-.0887	.0191	.0394	.0249	.0113	.0382
.100	.099	10.43	-.0604	.0153	.0264	.0197	.0086	.0297
.100	.099	12.51	-.0725	.0075	.0206	.0164	.0074	.0252
.100	.099	14.60	-.0444	.0100	.0231	.0141	.0068	.0229
.100	.099	16.64	-.0490	.0061	.0226	.0139	.0061	.0226
.100	.099	18.67	-.0314	.0086	.0242	.0119	.0068	.0247
.100	.099	20.65	-.0611	-.0037	.0263	.0121	.0067	.0242
.100	.099	23.69	-.0484	-.0007	.0227	.0148	.0033	.0203

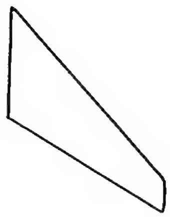


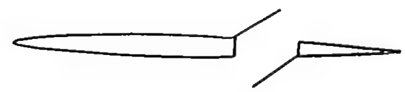


(b) Modified leading edge.

Table II. Concluded.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.11	-.0140	.0087	.0219	.0060	.0041	.0107
.028	.029	-.03	-.0223	.0086	.0106	.0069	.0039	.0104
.028	.029	2.06	-.0194	.0087	.0199	.0083	.0039	.0083
.028	.029	4.16	-.0189	.0077	.0261	.0092	.0035	.0081
.028	.029	6.24	-.0169	.0073	.0202	.0105	.0030	.0081
.028	.029	8.33	-.0244	.0047	.0181	.0086	.0024	.0066
.028	.029	10.42	-.0257	.0028	.0012	.0064	.0016	.0046
.028	.029	12.49	-.0156	.0019	.0232	.0060	.0004	.0018
.028	.029	14.57	-.0115	.0012	.0144	.0038	.0001	.0014
.028	.089	16.61	.0010	.0053	.0169	.0063	-.0010	-.0000
.028	.029	18.66	.0051	.0059	.0141	.0039	-.0009	-.0011
.028	.029	20.66	.0056	.0062	.0188	.0029	-.0014	-.0024
.028	.029	23.71	-.0100	.0007	.0113	.0028	-.0021	-.0005
.048	.050	-2.12	-.0388	.0181	.0308	.0108	.0076	.0215
.048	.050	-.03	-.0470	.0170	.0241	.0115	.0074	.0233
.048	.050	2.05	-.0489	.0160	.0330	.0137	.0072	.0208
.048	.050	4.14	-.0505	.0145	.0405	.0161	.0067	.0217
.048	.050	6.24	-.0499	.0123	.0421	.0178	.0057	.0205
.048	.050	8.33	-.0552	.0092	.0371	.0159	.0047	.0184
.048	.050	10.42	-.0512	.0057	.0190	.0127	.0032	.0142
.048	.050	12.50	-.0150	.0072	.0339	.0108	.0014	.0088
.048	.050	14.56	-.0336	-.0002	.0277	.0066	.0006	.0055
.048	.050	16.62	-.0147	.0047	.0262	.0076	-.0001	.0045
.048	.050	18.66	-.0256	.0002	.0267	.0077	-.0011	.0028
.048	.050	20.69	-.0150	.0023	.0337	.0066	-.0021	.0013
.048	.050	23.69	-.0290	-.0058	.0172	.0044	-.0023	.0018
.081	.077	-2.14	-.0801	.0355	.0478	.0201	.0160	.0416
.081	.077	-.04	-.0886	.0347	.0441	.0223	.0162	.0465
.081	.077	2.04	-.0884	.0333	.0533	.0248	.0156	.0443
.081	.077	4.14	-.0908	.0311	.0592	.0277	.0151	.0452
.081	.077	6.22	-.0906	.0280	.0592	.0304	.0137	.0435
.081	.077	8.30	-.1045	.0207	.0581	.0297	.0115	.0392
.081	.077	10.41	-.0979	.0138	.0355	.0248	.0089	.0324
.081	.077	12.49	-.0480	.0126	.0544	.0224	.0056	.0236
.081	.077	14.56	-.0611	.0032	.0441	.0167	.0034	.0158
.081	.077	16.61	-.0508	.0041	.0464	.0170	.0020	.0122
.081	.077	18.50	-.0913	-.0108	-.1068	.0170	.0004	.0114
.081	.077	20.67	-.0485	-.0010	.0540	.0142	-.0000	.0079
.081	.077	23.70	-.0356	-.0016	.0276	.0090	-.0003	.0059
.100	.099	-2.14	-.1177	.0494	.0529	.0253	.0230	.0611
.100	.099	-.06	-.1157	.0482	.0425	.0266	.0236	.0652
.100	.099	2.02	-.1111	.0468	.0520	.0295	.0232	.0640
.100	.099	4.11	-.1207	.0435	.0620	.0330	.0225	.0645
.100	.099	6.20	-.1228	.0383	.0603	.0357	.0205	.0625
.100	.099	8.29	-.1291	.0307	.0597	.0364	.0178	.0568
.100	.099	10.40	-.1194	.0225	.0372	.0319	.0143	.0478
.100	.099	12.46	-.0835	.0174	.0520	.0302	.0102	.0386
.100	.099	14.53	-.1049	.0034	.0485	.0246	.0075	.0301
.100	.099	16.58	-.0928	.0235	.0514	.0242	.0056	.0254
.100	.099	18.65	-.0714	.0035	.0509	.0244	.0036	.0216
.100	.099	20.68	-.0562	.0044	.0567	.0223	.0025	.0191
.100	.099	23.69	-.0551	-.0020	.0308	.0149	.0028	.0165

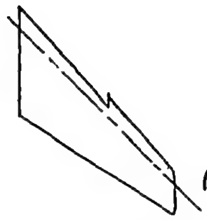




(a) Plain leading edge.

Table 12. Incremental aerodynamic coefficients. $y_i/_{b/2} = .47$ $M = .70$

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.10	-.0195	.0096	-.0014	.0027	.0046	.0122
.028	.029	-.01	-.0328	.0092	.0037	.0049	.0046	.0127
.028	.029	2.08	-.0344	.0075	.0096	.0069	.0042	.0135
.028	.029	4.19	-.0399	.0057	.0129	.0084	.0036	.0132
.028	.029	6.29	-.0408	.0035	.0093	.0074	.0030	.0129
.028	.029	8.41	-.0473	-.0017	.0111	.0084	.0015	.0103
.028	.029	10.51	-.0363	-.0022	.0047	.0067	.0008	.0081
.028	.029	12.59	-.0291	-.0032	.0041	.0044	.0006	.0078
.028	.029	14.66	-.0447	-.0087	-.0021	.0034	.0007	.0083
.028	.029	16.71	-.0206	-.0032	-.0026	.0029	.0005	.0076
.028	.029	18.72	-.0219	-.0053	-.0015	.0025	.0002	.0078
.028	.029	20.72	-.0208	-.0042	-.0014	.0036	-.0018	.0057
.028	.029	23.78	-.0434	-.0173	-.0070	.0037	-.0019	.0067
.048	.050	-2.11	-.0300	.0174	.0064	.0072	.0083	.0171
.048	.050	-.01	-.0453	.0165	.0126	.0100	.0082	.0187
.048	.050	2.08	-.0490	.0145	.0171	.0127	.0077	.0194
.048	.050	4.18	-.0598	.0115	.0236	.0153	.0065	.0183
.048	.050	6.29	-.0514	.0082	.0183	.0122	.0054	.0163
.048	.050	8.43	-.0405	.0040	.0178	.0130	.0030	.0112
.048	.050	10.53	-.0297	.0018	.0089	.0077	.0017	.0069
.048	.050	12.60	-.0093	.0036	.0057	.0061	.0013	.0052
.048	.050	14.67	-.0362	-.0043	-.0001	.0052	.0011	.0052
.048	.050	16.71	-.0286	-.0035	.0005	.0049	.0008	.0052
.048	.050	18.72	-.0139	.0001	.0017	.0042	.0008	.0056
.048	.050	20.78	-.0296	-.0065	.0620	.0049	-.0012	.0030
.048	.050	23.78	-.0434	-.0154	-.0034	.0061	-.0027	.0032
.081	.077	-2.12	-.0700	.0349	.0314	.0153	.0166	.0442
.081	.077	-.02	-.0807	.0340	.0320	.0187	.0164	.0433
.081	.077	2.07	-.0833	.0316	.0366	.0226	.0160	.0449
.081	.077	4.20	-.0884	.0280	.0448	.0263	.0142	.0425
.081	.077	6.29	-.0966	.0209	.0418	.0246	.0119	.0382
.081	.077	8.42	-.0755	.0107	.0335	.0199	.0070	.0248
.081	.077	10.52	-.0530	.0069	.0219	.0138	.0049	.0180
.081	.077	12.62	-.0245	.0088	.0229	.0111	.0038	.0152
.081	.077	14.69	-.0349	.0039	.0160	.0094	.0036	.0144
.081	.077	16.74	-.0257	.0048	.0192	.0087	.0034	.0144
.081	.077	18.74	-.0268	.0041	.0168	.0084	.0038	.0161
.081	.077	20.73	-.0377	-.0007	.0158	.0106	.0009	.0123
.081	.077	23.80	-.0505	-.0101	.0146	.0112	-.0009	.0095
.100	.099	-2.12	-.0737	.0484	.0350	.0192	.0235	.0592
.100	.099	-.03	-.0948	.0480	.0361	.0224	.0234	.0611
.100	.099	2.07	-.1037	.0453	.0415	.0265	.0231	.0625
.100	.099	4.17	-.1150	.0400	.0468	.0303	.0209	.0591
.100	.099	6.29	-.1151	.0328	.0469	.0304	.0179	.0533
.100	.099	8.41	-.0885	.0182	.0377	.0240	.0107	.0339
.100	.099	10.51	-.0666	.0133	.0211	.0178	.0084	.0263
.100	.099	12.61	-.0315	.0164	.0203	.0139	.0077	.0224
.100	.099	14.68	-.0489	.0086	.0189	.0122	.0073	.0218
.100	.099	16.73	-.0361	.0106	.0224	.0123	.0068	.0211
.100	.099	18.74	-.0316	.0108	.0229	.0124	.0071	.0237
.100	.099	20.74	-.0400	.0080	.0246	.0151	.0048	.0206
.100	.099	23.78	-.0827	-.0151	.0245	.0160	.0027	.0173



(b) Modified leading edge.

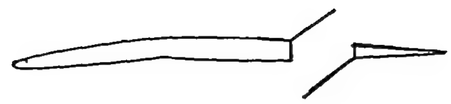
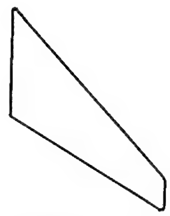
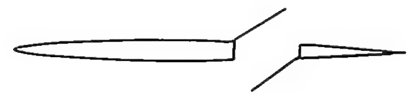


Table 12. Concluded.

δ_s	δ_d	a	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.14	-.0173	.0098	.0171	.0058	.0040	.0098
.028	.029	-.03	-.0182	.0100	.0109	.0066	.0041	.0088
.028	.029	2.07	-.0240	.0097	.0105	.0083	.0039	.0090
.028	.029	4.18	-.0236	.0092	.0166	.0095	.0035	.0088
.028	.029	6.28	-.0370	.0070	.0193	.0099	.0029	.0074
.028	.029	6.39	-.0187	.0069	.0109	.0077	.0024	.0064
.028	.029	10.51	-.0102	.0056	.0116	.0067	.0012	.0034
.028	.029	12.57	-.0115	.0032	.0150	.0043	.0005	.0010
.028	.029	14.65	-.0009	.0048	.0074	.0030	.0005	.0006
.028	.029	16.70	.0106	.0090	.0071	.0047	-.0004	-.0002
.028	.029	18.75	-.0023	.0049	.0047	.0051	-.0011	-.0019
.028	.029	20.75	.0122	.0059	-.0017	.0155	-.0050	-.0003
.028	.029	23.79	-.0053	.0022	.0033	.0031	-.0019	-.0004
.048	.050	-2.15	-.0392	.0187	.0278	.0103	.0075	.0185
.048	.050	-.03	-.0399	.0182	.0265	.0111	.0075	.0204
.048	.050	2.07	-.0494	.0174	.0270	.0140	.0073	.0205
.048	.050	4.17	-.0542	.0160	.0375	.0164	.0067	.0204
.048	.050	6.28	-.0614	.0128	.0407	.0176	.0056	.0185
.048	.050	8.39	-.0410	.0116	.0324	.0149	.0047	.0158
.048	.050	10.50	-.0456	.0063	.0308	.0122	.0027	.0103
.048	.050	12.56	-.0412	.0021	.0248	.0084	.0014	.0061
.048	.050	14.65	-.0125	.0054	.0235	.0055	.0010	.0039
.048	.050	16.69	-.0122	.0065	.0198	.0082	-.0003	.0034
.048	.050	18.76	-.0153	.0054	.0219	.0090	-.0014	.0012
.048	.050	20.75	-.0233	.0004	.0261	.0087	-.0022	.0018
.048	.050	23.81	-.0162	.0009	.0181	.0049	-.0022	.0018
.081	.077	-2.16	-.0785	.0355	.0435	.0198	.0156	.0392
.081	.077	.03	-.0783	.0354	.1109	.0214	.0159	.0415
.081	.077	2.05	-.0839	.0341	.0431	.0244	.0154	.0421
.081	.077	4.16	-.1028	.0309	.0538	.0277	.0146	.0426
.081	.077	6.26	-.1059	.0270	.0597	.0302	.0131	.0398
.081	.077	8.37	-.0908	.0226	.0509	.0281	.0111	.0351
.081	.077	10.49	-.0782	.0157	.0433	.0224	.0081	.0260
.081	.077	12.56	-.0665	.0088	.0415	.0174	.0054	.0181
.081	.077	14.66	-.0310	.0113	.0405	.0155	.0037	.0132
.081	.077	16.70	-.0357	.0093	.0401	.0176	.0019	.0106
.081	.077	18.75	-.0458	.0042	.0416	.0181	.0003	.0078
.081	.077	20.75	-.0216	-.0052	.0283	.0254	-.0025	.0090
.081	.077	23.80	-.0405	-.0017	.0311	.0091	.0006	.0084
.100	.099	-2.16	-.0969	.0476	.0547	.0244	.0220	.0571
.100	.099	-.06	-.1014	.0485	.0545	.0262	.0233	.0604
.100	.099	2.04	-.1141	.0468	.0498	.0287	.0227	.0614
.100	.099	4.16	-.1197	.0440	.0591	.0326	.0218	.0623
.100	.099	6.26	-.1324	.0380	.0643	.0358	.0198	.0587
.100	.099	8.37	-.1183	.0327	.0615	.0354	.0172	.0531
.100	.099	10.48	-.1105	.0226	.0545	.0302	.0131	.0416
.100	.099	12.56	-.0848	.0164	.0538	.0246	.0095	.0321
.100	.099	14.63	-.0815	.0091	.0491	.0222	.0076	.0249
.100	.099	16.69	-.0597	.0119	.0483	.0230	.0056	.0221
.100	.099	18.75	-.0635	.0069	.0502	.0236	.0034	.0180
.100	.099	20.75	-.0669	.0030	.0549	.0247	.0026	.0191
.100	.099	23.79	-.0587	-.0002	.0385	.0148	.0035	.0172





(a) Plain leading edge.

Table 13. Incremental aerodynamic coefficients. $y_i/_{b/2}$ = .47 M = .81

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	- 2.12	-.0149	.0097	.0041	.0028	.0048	.0122
.028	.029	- .02	-.0229	.0093	.0054	.0051	.0048	.0133
.028	.029	2.11	-.0303	.0083	.0099	.0079	.0045	.0134
.028	.029	4.24	-.0331	.0064	.0128	.0091	.0038	.0133
.028	.029	6.37	-.0287	.0049	.0121	.0083	.0031	.0126
.028	.029	8.48	-.0418	-.0008	.0120	.0081	.0016	.0090
.028	.029	10.59	-.0453	-.0037	.0087	.0051	.0010	.0078
.028	.029	12.68	-.0171	-.0007	.0089	.0032	.0009	.0077
.028	.029	14.76	-.0130	-.0004	.0042	.0028	.0009	.0080
.028	.029	16.77	-.0206	-.0033	.0036	.0029	.0007	.0073
.028	.029	18.79	-.0402	-.0099	-.0003	.0065	-.0037	.0002
.028	.029	20.82	-.0330	-.0095	-.0026	.0037	-.0013	.0053
.028	.029	23.90	.0058	.0049	-.0013	.0034	-.0014	.0073
.048	.050	- 2.13	-.0321	.0176	.0099	.0066	.0085	.0184
.048	.050	- .01	-.0353	.0167	.0106	.0097	.0083	.0185
.048	.050	2.10	-.0492	.0150	.0166	.0125	.0078	.0185
.048	.050	4.23	-.0565	.0122	.0211	.0150	.0068	.0175
.048	.050	6.36	-.0455	.0093	.0190	.0138	.0053	.0153
.048	.050	8.48	-.0534	.0013	.0192	.0116	.0028	.0090
.048	.050	10.58	-.0587	-.0048	.0097	.0061	.0018	.0047
.048	.050	12.68	-.0178	.0013	.0120	.0047	.0015	.0040
.048	.050	14.76	-.0186	.0004	.0059	.0043	.0015	.0050
.048	.050	16.77	-.0406	-.0096	.0060	.0049	.0011	.0041
.048	.050	18.80	-.0378	-.0069	.0070	.0084	-.0031	-.0022
.048	.050	20.82	-.0341	-.0076	-.0005	.0054	-.0008	.0014
.048	.050	23.88	-.0135	-.0021	.0041	.0051	-.0014	.0039
.081	.077	- 2.14	-.0608	.0341	.0311	.0143	.0163	.0432
.081	.077	- .02	-.0699	.0333	.0304	.0178	.0162	.0425
.081	.077	2.09	-.0840	.0314	.0394	.0223	.0158	.0436
.081	.077	4.22	-.0994	.0266	.0433	.0258	.0141	.0410
.081	.077	6.35	-.0852	.0201	.0363	.0228	.0109	.0337
.081	.077	8.48	-.0858	.0072	.0361	.0174	.0066	.0216
.081	.077	10.58	-.0798	-.0002	.0244	.0104	.0049	.0154
.081	.077	12.69	-.0315	.0069	.0232	.0087	.0042	.0137
.081	.077	14.78	-.0097	.0123	.0200	.0079	.0045	.0145
.081	.077	16.81	-.0204	.0074	.0222	.0087	.0042	.0148
.081	.077	18.80	-.0556	-.0045	.0221	.0127	.0003	.0090
.081	.077	20.83	-.0430	-.0021	.0172	.0119	.0006	.0097
.081	.077	23.90	-.0195	.0043	.0211	.0113	-.0007	.0087
.100	.099	- 2.13	-.0712	.0477	.0356	.0172	.0233	.0596
.100	.099	- .03	-.0826	.0472	.0328	.0208	.0231	.0597
.100	.099	2.09	-.0925	.0446	.0392	.0254	.0223	.0597
.100	.099	4.22	-.1065	.0395	.0462	.0294	.0205	.0565
.100	.099	6.34	-.1006	.0318	.0456	.0293	.0166	.0484
.100	.099	8.48	-.0894	.0154	.0371	.0210	.0100	.0296
.100	.099	10.60	-.0686	.0112	.0226	.0134	.0084	.0226
.100	.099	12.69	-.0327	.0149	.0235	.0115	.0076	.0204
.100	.099	14.78	-.0156	.0184	.0199	.0106	.0077	.0208
.100	.099	16.81	-.0223	.0155	.0244	.0117	.0077	.0219
.100	.099	18.79	-.0663	.0003	.0237	.0149	.0048	.0178
.100	.099	20.83	-.0633	-.0005	.0260	.0164	.0042	.0185
.100	.099	23.92	-.0259	.0116	.0312	.0166	.0032	.0163

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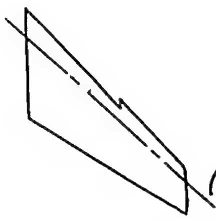
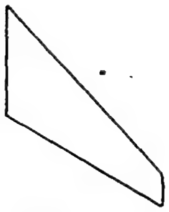


(b) Modified leading edge.

Table 13. Concluded

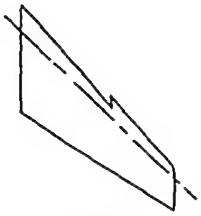
δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.16	-.0176	.0098	.0170	.0056	.0041	.0077
.028	.029	-.04	-.0250	.0098	.0103	.0064	.0042	.0087
.028	.029	2.06	-.0248	.0097	.0134	.0085	.0041	.0088
.028	.029	4.21	-.0228	.0091	.0176	.0098	.0036	.0085
.028	.029	6.35	-.0165	.0088	.0161	.0100	.0029	.0078
.028	.029	8.46	-.0097	.0072	.0086	.0076	.0027	.0066
.028	.029	10.57	-.0122	.0032	.0569	.0063	.0007	.0008
.028	.029	12.65	-.0128	.0020	.0122	.0040	.0006	.0006
.028	.029	14.71	-.0009	.0047	.0030	.0041	.0002	-.0007
.028	.029	16.77	-.0279	-.0035	.0100	.0053	-.0004	-.0010
.028	.029	18.82	-.0011	.0060	.0049	.0069	-.0024	-.0045
.028	.029	20.83	.0056	.0038	-.0027	-.0013	-.0022	-.0045
.028	.029	23.91	.0057	.0047	.0005	.0023	-.0010	-.0004
.048	.050	-2.17	-.0404	.0181	.0295	.0108	.0075	.0175
.048	.050	-.03	-.0448	.0179	.0252	.0105	.0075	.0198
.048	.050	2.09	-.0461	.0174	.0271	.0136	.0072	.0199
.048	.050	4.22	-.0483	.0159	.0370	.0165	.0068	.0199
.048	.050	6.34	-.0559	.0133	.0395	.0166	.0056	.0176
.048	.050	8.46	-.0270	.0127	.0245	.0134	.0049	.0153
.048	.050	10.58	-.0130	.0089	.0699	.0102	.0017	.0064
.048	.050	12.65	-.0195	.0046	.0237	.0070	.0013	.0044
.048	.050	14.73	-.0071	.0072	.0197	.0072	.0005	.0024
.048	.050	16.76	-.0280	.0008	.0240	.0083	-.0002	.0018
.048	.050	18.83	-.0208	.0032	.0225	.0096	-.0023	-.0019
.048	.050	20.85	.0059	.0070	.0105	-.0003	-.0008	-.0013
.048	.050	23.93	.0011	.0055	.0142	.0035	-.0005	.0017
.081	.077	-2.17	-.0751	.0340	.0465	.0188	.0153	.0370
.081	.077	-.05	-.0818	.0346	.0430	.0195	.0158	.0417
.081	.077	2.07	-.0912	.0334	.0474	.0231	.0153	.0417
.081	.077	4.19	-.0952	.0308	.0561	.0277	.0146	.0414
.081	.077	6.32	-.1089	.0264	.0581	.0300	.0127	.0383
.081	.077	8.46	-.0824	.0220	.0489	.0250	.0107	.0320
.081	.077	10.56	-.0571	.0150	.0870	.0200	.0066	.0203
.081	.077	12.67	-.0450	.0108	.0422	.0166	.0048	.0145
.081	.077	14.73	-.0398	.0095	.0386	.0163	.0033	.0115
.081	.077	16.79	-.0495	.0046	.0438	.0170	.0021	.0094
.081	.077	18.82	-.0543	.0008	.0412	.0176	-.0002	.0056
.081	.077	20.83	-.0312	.0036	.0280	.0095	.0011	.0070
.081	.077	23.92	-.0254	.0027	.0244	.0083	.0016	.0063
.100	.099	-2.18	-.0914	.0462	.0517	.0228	.0215	.0543
.100	.099	-.06	-.1023	.0477	.0469	.0240	.0228	.0582
.100	.099	2.05	-.1107	.0457	.0483	.0269	.0220	.0581
.100	.099	4.19	-.1163	.0428	.0580	.0327	.0213	.0586
.100	.099	6.30	-.1279	.0370	.0621	.0357	.0186	.0039
.100	.099	8.43	-.1123	.0310	.0520	.0325	.0162	.0466
.100	.099	10.56	-.0814	.0233	.0956	.0280	.0115	.0329
.100	.099	12.64	-.0799	.0143	.0479	.0230	.0088	.0257
.100	.099	14.72	-.0512	.0160	.0420	.0210	.0072	.0211
.100	.099	16.77	-.0622	.0093	.0450	.0209	.0054	.0184
.100	.099	18.82	-.0503	.0113	.0418	.0223	.0028	.0131
.100	.099	20.84	-.0425	.0088	.0375	.0146	.0044	.0144
.100	.099	23.90	-.0604	-.0036	.0360	.0137	.0050	.0157

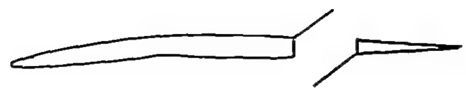


(a) Plain leading edge.

Table 14. Incremental aerodynamic coefficients. $y/_{b/2}$ = .47 M = .85

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	- 2.14	-.0164	.0103	.0009	.0026	.0050	.0129
.028	.029	- .00	-.0231	.0100	.0079	.0056	.0051	.0135
.028	.029	2.12	-.0404	.0086	.0132	.0079	.0048	.0140
.028	.029	4.26	-.0398	.0064	.0161	.0091	.0040	.0136
.028	.029	6.39	-.0396	.0039	.0161	.0086	.0031	.0125
.028	.029	8.53	-.0395	-.0003	.0189	.0087	.0015	.0094
.028	.029	10.64	-.0417	-.0024	.0082	.0061	.0009	.0077
.028	.029	12.70	-.0197	-.0016	.0061	.0029	.0010	.0065
.028	.029	14.76	-.0367	-.0081	.0066	.0033	.0009	.0075
.028	.029	16.84	-.0072	.0013	-.0004	.0031	.0007	.0071
.028	.029	18.85	-.0430	-.0102	.0010	.0073	-.0046	-.0020
.048	.050	- 2.13	-.0291	.0180	.0095	.0070	.0088	.0192
.048	.050	- .01	-.0365	.0177	.0137	.0099	.0086	.0191
.048	.050	2.10	-.0571	.0154	.0207	.0124	.0081	.0191
.048	.050	4.26	-.0535	.0134	.0247	.0154	.0071	.0180
.048	.050	6.39	-.0488	.0092	.0222	.0140	.0052	.0148
.048	.050	8.52	-.0605	.0008	.0241	.0117	.0026	.0087
.048	.050	10.62	-.0582	-.0040	.0137	.0065	.0017	.0047
.048	.050	12.71	-.0145	.0027	.0096	.0047	.0016	.0040
.048	.050	14.80	-.0091	.0036	.0091	.0047	.0017	.0046
.048	.050	16.84	-.0178	.0001	.0056	.0051	.0011	.0041
.048	.050	18.83	-.0602	-.0133	.0027	.0091	-.0039	-.0051
.081	.077	- 2.14	-.0597	.0348	.0283	.0138	.0164	.0440
.081	.077	- .02	-.0691	.0344	.0333	.0182	.0164	.0431
.081	.077	2.11	-.0903	.0319	.0403	.0224	.0159	.0442
.081	.077	4.23	-.1016	.0271	.0451	.0265	.0141	.0412
.081	.077	6.37	-.0876	.0200	.0395	.0237	.0105	.0328
.081	.077	8.52	-.0853	.0084	.0395	.0188	.0063	.0208
.081	.077	10.65	-.0420	.0076	.0210	.0099	.0047	.0141
.081	.077	12.71	-.0278	.0082	.0202	.0078	.0044	.0129
.081	.077	14.80	-.0322	.0051	.0218	.0083	.0043	.0130
.081	.077	16.86	-.0185	.0090	.0192	.0091	.0039	.0134
.081	.077	18.86	-.0539	-.0024	.0227	.0138	-.0008	.0053
.100	.099	- 2.13	-.0610	.0486	.0314	.0165	.0236	.0603
.100	.099	- .03	-.0791	.0484	.0329	.0206	.0237	.0605
.100	.099	2.09	-.1006	.0460	.0399	.0250	.0229	.0609
.100	.099	4.23	-.1132	.0399	.0465	.0302	.0206	.0566
.100	.099	6.37	-.1070	.0299	.0450	.0284	.0158	.0451
.100	.099	8.52	-.0810	.0190	.0394	.0165	.0115	.0297
.100	.099	10.65	-.0393	.0181	.0196	.0130	.0085	.0220
.100	.099	12.72	-.0250	.0170	.0208	.0097	.0081	.0208
.100	.099	14.78	-.0481	.0079	.0228	.0110	.0076	.0197
.100	.099	16.85	-.0293	.0148	.0235	.0129	.0075	.0206
.100	.099	18.87	-.0599	.0053	.0274	.0180	.0034	.0143





(b) Modified leading edge.

Table 14. Concluded.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.18	-.0155	.0096	.0143	.0052	.0041	.0106
.028	.029	-.04	-.0161	.0103	.0133	.0064	.0045	.0101
.028	.029	2.11	-.0233	.0104	.0175	.0090	.0044	.0105
.028	.029	4.24	-.0261	.0085	.0172	.0109	.0039	.0092
.028	.029	6.38	-.0306	.0068	.0169	.0105	.0031	.0077
.028	.029	8.51	-.0098	.0069	.0070	.0092	.0018	.0045
.028	.029	10.60	-.00-7	.0057	.0102	.0069	.0008	.0016
.028	.029	12.69	-.0027	.0029	.0151	.0047	.0007	.0010
.028	.029	14.75	-.0133	.0018	.0134	.0051	.0001	-.0001
.028	.029	16.81	-.0189	.0001	.0129	.0061	-.0006	-.0004
.028	.029	18.87	.0038	.0052	.0042	.0026	-.0005	-.0027
.048	.050	-2.17	-.0356	.0181	.0282	.0101	.0076	.0206
.048	.050	.04	-.0343	.0168	.0743	.0105	.0079	.0207
.048	.050	2.10	-.0495	.0183	.0329	.0138	.0077	.0215
.048	.050	4.24	-.0562	.0154	.0370	.0170	.0069	.0196
.048	.050	6.38	-.0558	.0131	.0370	.0180	.0058	.0176
.048	.050	8.43	-.0589	.0072	-.0131	.0150	.0040	.0129
.048	.050	10.62	-.0184	.0084	.0263	.0112	.0018	.0063
.048	.050	12.70	-.0206	.0031	.0299	.0077	.0012	.0042
.048	.050	14.92	-.0041	.0074	.1270	.0082	.0005	.0027
.048	.050	16.82	-.02-0	.0014	.0283	.0091	-.0005	.0019
.048	.050	18.89	-.0026	.0058	.0180	.0032	.0008	.0004
.081	.077	-2.18	-.0775	.0349	.0475	.0191	.0153	.0414
.081	.077	-.04	-.0759	.0353	.0447	.0203	.0160	.0434
.081	.077	2.08	-.0904	.0343	.0512	.0242	.0155	.0435
.081	.077	4.22	-.1013	.0308	.0578	.0287	.0144	.0415
.081	.077	6.36	-.1109	.0257	.0589	.0315	.0125	.0371
.081	.077	8.49	-.0816	.0209	.0514	.0275	.0099	.0302
.081	.077	10.60	-.0586	.0147	.0423	.0203	.0059	.0181
.081	.077	12.69	-.0445	.0095	.0471	.0176	.0042	.0136
.081	.077	14.76	-.0401	.0106	.0466	.0171	.0030	.0085
.081	.077	16.83	-.0397	.0085	.0418	.0170	.0020	.0086
.100	.099	-2.20	-.0918	.0468	.0496	.0223	.0217	.0581
.100	.099	-.07	-.0930	.0486	.0466	.0234	.0231	.0588
.100	.099	2.06	-.1141	.0457	.0498	.0269	.0220	.0585
.100	.099	4.20	-.1254	.0427	.0593	.0330	.0213	.0082
.100	.099	6.34	-.1361	.0365	.0622	.0369	.0188	.0530
.100	.099	8.49	-.0978	.0288	.0571	.0321	-.0008	.0364
.100	.099	10.58	-.0806	.0233	.0488	.0270	.0114	.0322
.100	.099	12.69	-.0630	.0150	.0490	.0224	.0086	.0241
.100	.099	14.76	-.0540	.0154	.0488	.0204	.0072	.0211
.100	.099	16.81	-.0706	.0079	.0493	.0212	.0055	.0186

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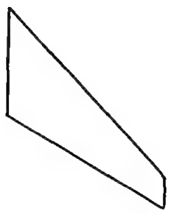
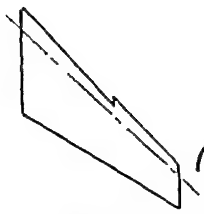


(a) Plain leading edge.

Table 15. Incremental aerodynamic coefficients. $y_i/(b/2) = .47$ $M = .90$

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.14	-.0088	.0099	-.0005	.0023	.0051	.0127
.028	.029	-.00	-.0206	.0101	.0076	.0052	.0052	.0139
.028	.029	2.14	-.0367	.0091	.0152	.0081	.0049	.0145
.028	.029	4.29	-.0428	.0061	.0219	.0096	.0043	.0139
.028	.029	6.42	-.0375	.0021	.0240	.0087	.0028	.0106
.028	.029	8.55	-.0209	.0023	.0127	.0069	.0015	.0080
.028	.029	10.66	-.0225	-.0007	.0117	.0040	.0013	.0072
.028	.029	12.73	-.0379	-.0050	.0150	.0026	.0015	.0076
.048	.050	-2.14	-.0310	.0193	.0114	.0067	.0093	.0205
.048	.050	-.01	-.0376	.0189	.0154	.0100	.0091	.0206
.048	.050	2.13	-.0620	.0163	.0250	.0135	.0085	.0202
.048	.050	4.27	-.0653	.0130	.0310	.0162	.0075	.0190
.048	.050	6.42	-.0596	.0056	.0341	.0136	.0051	.0134
.048	.050	8.56	-.0376	.0043	.0285	.0120	.0028	.0082
.048	.050	10.81	-.0124	.0032	.1029	.0046	.0023	.0045
.048	.050	12.68	-.0773	-.0152	.0138	.0034	.0025	.0051
.081	.077	-2.14	-.0542	.0355	.0276	.0129	.0169	.0445
.081	.077	-.01	-.0672	.0356	.0339	.0179	.0169	.0445
.081	.077	2.12	-.0963	.0324	.0468	.0227	.0162	.0443
.081	.077	4.28	-.1102	.0269	.0592	.0286	.0143	.0409
.081	.077	6.41	-.0979	.0171	.0538	.0249	.0102	.0305
.081	.077	8.55	-.0823	.0079	.0486	.0198	.0065	.0201
.081	.077	10.66	-.0248	.0120	.0166	.0071	.0057	.0141
.081	.077	12.76	-.0270	.0085	.0237	.0026	.0064	.0143
.100	.099	-2.15	-.0644	.0490	.0272	.0152	.0237	.0604
.100	.099	-.03	-.0769	.0491	.0309	.0195	.0237	.0608
.100	.099	2.12	-.1062	.0455	.0447	.0248	.0228	.0605
.100	.099	4.27	-.1232	.0395	.0587	.0311	.0208	.0568
.100	.099	6.41	-.1075	.0289	.0580	.0297	.0164	.0450
.100	.099	8.53	-.0907	.0157	.0465	.0233	.0104	.0290
.100	.099	10.66	-.0375	.0177	.0203	.0124	.0086	.0212
.100	.099	12.76	-.0214	.0189	.0173	.0101	.0091	.0211



(b) Modified leading edge.

Table 15. Concluded.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.18	-.0172	.0097	.0122	.0059	.0043	.0108
.028	.029	-.04	-.0182	.0108	.0123	.0066	.0047	.0105
.028	.029	2.11	-.0222	.0103	.0192	.0092	.0047	.0104
.028	.029	4.25	-.0302	.0080	.0232	.0112	.0038	.0086
.028	.029	6.40	-.0192	.0066	.0168	.0092	.0023	.0053
.028	.029	8.52	-.0053	.0062	.0116	.0074	.0010	.0019
.028	.029	10.63	.0155	.0142	.0107	.0055	.0011	.0009
.028	.029	12.70	-.0011	.0045	.0156	.0052	.0004	.0002
.048	.050	-2.19	-.0340	.0182	.0247	.0104	.0078	.0219
.048	.050	-.12	-.1107	.0191	.0234	.0108	.0082	.0221
.048	.050	2.12	-.0508	.0182	.0378	.0145	.0082	.0221
.048	.050	4.26	-.0480	.0175	.0407	.0185	.0068	.0198
.048	.050	6.40	-.0512	.0108	.0429	.0172	.0050	.0148
.048	.050	8.52	-.0217	.0108	.0280	.0131	.0028	.0090
.048	.050	10.62	.0040	.0144	.0229	.0066	.0019	.0052
.048	.050	12.73	.0153	.0124	.0282	.0073	.0012	.0045
.081	.077	-2.19	-.0704	.0349	.0448	.0189	.0156	.0421
.081	.077	-.05	-.0760	.0365	.0472	.0203	.0164	.0435
.081	.077	2.09	-.0979	.0342	.0580	.0246	.0158	.0424
.081	.077	4.25	-.1061	.0295	.0690	.0300	.0143	.0397
.081	.077	6.39	-.1030	.0226	.0717	.0317	.0118	.0335
.081	.077	8.52	-.0800	.0171	.0642	.0286	.0079	.0221
.081	.077	10.62	-.0274	.0219	.0386	.0174	.0056	.0145
.081	.077	12.71	-.0283	.0138	.0448	.0160	.0043	.0116
.100	.099	-2.20	-.0813	.0474	.0470	.0214	.0219	.0079
.100	.099	-.06	-.0909	.0497	.0483	.0232	.0233	.0596
.100	.099	2.08	-.1162	.0467	.0579	.0278	.0226	.0593
.100	.099	4.23	-.1301	.0420	.0731	.0349	.0212	.0575
.100	.099	6.37	-.1229	.0348	.0724	.0370	.0179	.0496
.100	.099	8.49	-.1072	.0264	.0671	.0348	.0140	.0385
.100	.099	10.61	-.0598	.0247	.0501	.0237	.0108	.0285
.100	.099	12.70	-.0472	.0187	.0464	.0196	.0085	.0222

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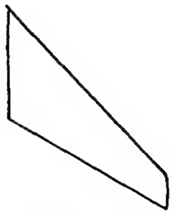
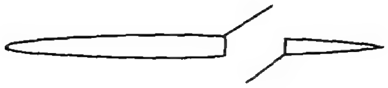
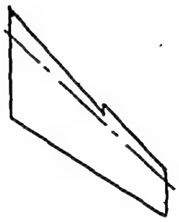


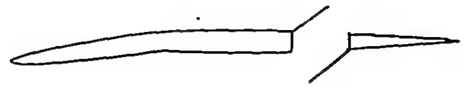


(a) Plain leading edge.

Table 16. Incremental aerodynamic coefficients. $y_i/_{b/2} = 47$ $M = .94$

δ_s	δ_d	a	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.13	-.0107	.0106	-.0023	.0009	.0053	.0122
.028	.029	-.00	-.0231	.0106	.0071	.0046	.0055	.0141
.028	.029	2.14	-.0327	.0091	.0130	.0082	.0050	.0138
.028	.029	4.26	-.0332	.0073	.0147	.0092	.0038	.0116
.028	.029	6.40	-.0289	.0048	.0150	.0067	.0025	.0087
.028	.029	8.53	-.0235	.0022	.0112	.0054	.0019	.0078
.048	.050	-2.15	-.0252	.0190	.0053	.0060	.0093	.0204
.048	.050	-.01	-.0404	.0185	.0170	.0096	.0093	.0208
.048	.050	2.13	-.0579	.0158	.0275	.0140	.0085	.0204
.048	.050	4.27	-.0474	.0142	.0267	.0136	.0076	.0172
.048	.050	6.41	-.0460	.0098	.0241	.0131	.0048	.0116
.048	.050	8.52	-.0265	.0082	.0094	.0110	.0036	.0086
.081	.077	-2.14	-.0502	.0354	.0249	.0118	.0170	.0437
.081	.077	-.01	-.0704	.0352	.0338	.0173	.0170	.0443
.081	.077	2.13	-.0896	.0327	.0460	.0240	.0161	.0440
.081	.077	4.27	-.0913	.0281	.0536	.0277	.0140	.0387
.081	.077	6.40	-.0781	.0235	.0461	.0244	.0107	.0295
.081	.077	8.53	-.0693	.0140	.0425	.0190	.0078	.0228
.081	.077	10.66	-.0486	.0169	.0467	.0228	.0060	.0183
.100	.099	-2.15	-.0549	.0486	.0224	.0133	.0235	.0594
.100	.099	-.02	-.0782	.0487	.0336	.0190	.0237	.0606
.100	.099	2.12	-.1019	.0466	.0472	.0265	.0230	.0611
.100	.099	4.26	-.0984	.0420	.0518	.0315	.0204	.0552
.100	.099	6.40	-.0915	.0301	.0496	.0289	.0157	.0425
.100	.099	8.53	-.0696	.0222	.0427	.0254	.0110	.0302
.100	.099	10.66	-.0736	.0184	.0621	.0247	.0091	.0254

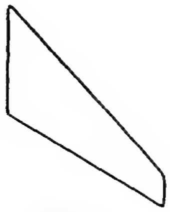




(b) Modified leading edge.

Table 16. Concluded.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
.028	.029	-2.33	-.0179	.0105	-.0721	.0052	.0045	.0114
.028	.029	-.04	-.0202	.0105	.0141	.0062	.0048	.0112
.028	.029	2.12	-.0077	.0115	.0187	.0089	.0045	.0100
.028	.029	4.24	-.0236	.0095	.0183	.0106	.0033	.0074
.028	.029	6.37	-.0139	.0056	.0130	.0089	.0016	.0028
.028	.029	8.48	-.0077	.0077	.0101	.0089	.0008	.0004
.048	.050	-2.17	-.0269	.0206	.0337	.0097	.0084	.0233
.048	.050	-.04	-.0373	.0200	.0303	.0110	.0085	.0233
.048	.050	2.12	-.0405	.0192	.0361	.0147	.0080	.0222
.048	.050	4.25	-.0473	.0182	.0379	.0176	.0063	.0186
.048	.050	6.38	-.0392	.0140	.0358	.0171	.0038	.0119
.048	.050	8.50	-.0254	.0100	.0299	.0141	.0023	.0072
.081	.077	-2.19	-.0641	.0359	.0451	.0130	.0160	.0420
.081	.077	-.04	-.0760	.0353	.0486	.0144	.0165	.0429
.081	.077	2.10	-.0868	.0339	.0547	.0175	.0162	.0416
.081	.077	4.24	-.0922	.0302	.0644	.0209	.0149	.0374
.081	.077	6.37	-.0827	.0270	.0606	.0214	.0119	.0289
.081	.077	8.50	-.0716	.0157	.0629	.0206	.0087	.0202
.100	.099	-2.21	-.0721	.0475	.0447	.0194	.0219	.0575
.100	.099	-.06	-.0879	.0497	.0480	.0220	.0233	.0599
.100	.099	2.08	-.1034	.0470	.0579	.0285	.0226	.0593
.100	.099	4.22	-.1094	.0414	.0667	.0342	.0201	.0549
.100	.099	6.36	-.1034	.0352	.0661	.0365	.0163	.0455
.100	.099	8.46	-.0916	.0258	.0703	.0354	.0127	.0347



(a) Plain leading edge.

Table 17. Incremental aerodynamic coefficients. $y_i/(b/2) = .47$

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
				M=.40				
.081	.000	-2.04	-.0035	.0141	.0084	.0049	.0065	-.0026
.081	.000	.00	-.0037	.0142	.0089	.0061	.0066	-.0105
.081	.000	2.06	-.0134	.0134	.0049	.0085	.0069	-.0096
.081	.000	4.10	-.0256	.0102	.0128	.0109	.0058	-.0112
.081	.000	6.17	-.0178	-.0065	.0118	.0109	.0041	-.0075
.081	.000	8.23	-.0139	.0063	.0050	.0053	.0021	-.0042
.081	.000	10.29	-.0205	-.0027	.0013	.0020	-.0000	.0046
.081	.000	12.34	-.0052	-.0020	.0037	.0005	-.0007	.0088
.081	.000	14.38	-.0098	-.0041	-.0034	-.0006	-.0004	.0130
.081	.000	16.43	-.0135	-.0056	-.0002	-.0005	-.0006	.0161
.081	.000	18.46	-.0001	-.0003	.0017	-.0016	-.0002	.0161
.081	.000	20.47	.0250	.0112	-.0264	-.0018	-.0012	.0183
.081	.000	23.48	-.0066	-.0029	-.0126	-.0044	.0022	.0274
				M=.60				
.081	.000	-2.08	-.0076	.0148	.0107	.0075	.0065	-.0073
.081	.000	.01	-.0150	.0151	.0070	.0095	.0067	-.0102
.081	.000	2.09	-.0237	.0132	.0110	.0119	.0066	-.0097
.081	.000	4.17	-.0292	.0105	.0139	.0143	.0055	-.0087
.081	.000	6.26	-.0209	.0096	.0093	.0119	.0037	-.0039
.081	.000	8.36	-.0121	.0048	.0050	.0052	.0013	.0004
.081	.000	10.46	.0118	.0020	.0054	.0009	-.0002	.0086
.081	.000	12.53	-.0159	-.0045	.0003	-.0000	-.0006	.0116
.081	.000	14.58	-.0107	-.0051	-.0015	-.0010	-.0003	.0137
.081	.000	16.65	.0039	-.0008	-.0000	-.0012	-.0004	.0157
.081	.000	18.63	-.0080	-.0020	-.0192	-.0041	.0007	.0215
.081	.000	20.65	-.0162	-.0074	-.0107	-.0017	-.0012	.0231
.081	.000	23.69	-.0002	-.0004	-.0068	-.0009	-.0009	.0270
				M=.70				
.081	.000	-2.08	-.0095	.0150	.0153	.0091	.0065	-.0075
.081	.000	.01	-.0192	.0148	.0138	.0113	.0066	-.0108
.081	.000	2.10	-.0263	.0127	.0176	.0136	.0065	-.0092
.081	.000	4.21	-.0287	.0108	.0201	.0153	.0052	-.0082
.081	.000	6.32	-.0226	.0088	.0137	.0116	.0035	-.0029
.081	.000	8.42	-.0213	.0026	.0063	.0052	.0012	.0027
.081	.000	10.52	-.0160	-.0029	.0031	-.0015	-.0000	.0082
.081	.000	12.59	-.0203	-.0061	.0024	.0003	-.0005	.0113
.081	.000	14.69	.0002	-.0013	-.0034	-.0011	-.0003	.0133
.081	.000	16.71	-.0053	-.0019	-.0029	-.0012	-.0004	.0153
.081	.000	18.70	-.0157	-.0055	-.0129	-.0026	.0004	.0201
.081	.000	20.71	-.0146	-.0055	-.0082	-.0000	-.0023	.0214
.081	.000	23.77	-.0214	-.0097	-.0110	.0008	-.0018	.0268

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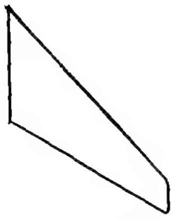
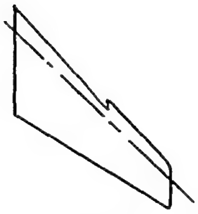


(a) Concluded.

Table 17. Continued.

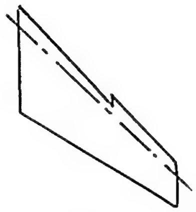
δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
				$M = .81$				
.081	.000	- 2.10	-.0167	.0150	.0225	.0115	.0067	-.0084
.081	.000	- .00	-.0252	.0146	.0173	.0132	.0066	-.0119
.081	.000	2.13	-.0339	.0128	.0233	.0157	.0065	-.0103
.081	.000	4.73	.4424	.0487	.0584	.0178	.0054	-.0064
.081	.000	6.37	-.0180	.0096	.0157	.0117	.0030	-.0013
.081	.000	8.51	-.0244	.0003	.0125	.0017	.0007	.0037
.081	.000	10.60	-.0224	-.0039	.0006	-.0027	-.0003	.0077
.081	.000	12.69	.0073	-.0004	.0023	-.0009	-.0005	.0104
.081	.000	14.75	-.0039	-.0019	-.0028	-.0011	-.0004	.0127
.081	.000	16.79	-.0066	-.0023	-.0014	-.0007	-.0006	.0139
.081	.000	18.78	-.0230	-.0089	-.0052	-.0008	-.0007	.0186
.081	.000	20.79	-.0375	-.0146	-.0084	-.0003	-.0012	.0207
.081	.000	23.89	.0110	.0047	-.0073	-.0005	.0004	.0294
				$M = .85$				
.081	.000	- 2.11	-.0161	.0155	.0226	.0123	.0068	-.0101
.081	.000	.01	-.0294	.0153	.0219	.0147	.0068	-.0137
.081	.000	2.13	-.0420	.0130	.0267	.0171	.0067	-.0120
.081	.000	4.27	-.0421	.0109	.0277	.0178	.0055	-.0079
.081	.000	6.37	-.0531	.0059	.0176	.0125	.0027	-.0019
.081	.000	8.53	-.0190	.0046	.0137	.0041	.0008	.0029
.081	.000	10.64	-.0176	-.0032	.0040	-.0013	-.0004	.0062
.081	.000	12.71	.0126	.0010	-.0013	-.0014	-.0006	.0080
.081	.000	14.77	-.0206	-.0071	.0002	-.0007	-.0005	.0102
.081	.000	16.82	-.0021	-.8011	-.0080	-.0006	-.0006	.0127
.081	.000	18.85	-.0209	-.0060	-.0113	.0024	-.0039	.0223
				$M = .90$				
.081	.000	- 2.11	-.0195	.0162	.0270	.0167	.0070	-.0136
.081	.000	.15	.0859	.0163	.0350	.0159	.0072	-.0144
.081	.000	- 2.15	-.0486	.0135	.0330	.0186	.0068	-.0128
.081	.000	4.29	-.0607	.0101	.0386	.0208	.0057	-.0089
.081	.000	6.43	-.0411	.0052	.0329	.0139	.0031	-.0022
.081	.000	8.56	-.0056	.0044	.0107	.0061	.0007	.0047
.081	.000	10.67	-.0093	-.0029	.0075	-.0014	.0002	.0061
.081	.000	12.72	-.0255	-.0078	.0069	-.0026	.0001	.0084
				$M = .94$				
.081	.000	- 2.09	-.0245	.0176	.0340	.0153	.0075	-.0147
.081	.000	.02	-.0301	.0160	.0284	.0163	.0073	-.0160
.081	.000	2.15	-.0462	.0136	.0336	.0199	.0068	-.0140
.081	.000	4.30	-.0324	.0124	.0310	.0202	.0050	-.0083
.081	.000	6.42	-.0373	.0035	.0339	.0133	.0026	-.0025
.081	.000	8.54	-.0282	-.0010	.0288	.0054	.0008	.0027
.081	.000	10.65	-.0274	-.0010	.0344	.0030	.0008	.0049

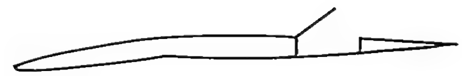


(b) Modified leading edge.

Table 17. Continued.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
				M = .40				
.081	.000	- 2.02	.0884	.0115	.0275	.0067	.0071	-.0004
.081	.000	- .00	.0309	.0155	.0230	.0072	.0068	-.0046
.081	.000	2.06	.0132	.0163	.0349	.0097	.0064	-.0045
.081	.000	4.10	-.0062	.0146	.0310	.0122	.0065	-.0058
.081	.000	6.15	-.0091	.0140	.0464	.0142	.0056	-.0037
.081	.000	8.23	.0123	.0156	.0229	.0128	.0052	-.0025
.081	.000	10.28	.0150	.0135	.0426	.0110	.0035	-.0019
.081	.000	12.34	.0261	.0099	.0365	.0060	.0014	-.0007
.081	.000	14.36	.0274	.0085	.0335	.0046	-.0000	.0062
.081	.000	16.41	.0272	.0089	.0265	.0029	-.0003	.0145
.081	.000	18.45	.0126	.0087	.0280	.0017	-.0005	.0163
.081	.000	20.46	-.0142	.0024	.0305	.0002	-.0013	.0198
.081	.000	23.50	.0042	.0056	.0167	.0033	-.0021	.0285
				M = .60				
.081	.000	- 2.10	.0013	.0152	.0229	.0080	.0072	-.0030
.081	.000	- .02	-.0138	.0151	.0161	.0104	.0065	-.0063
.081	.000	2.07	-.0186	.0146	.0252	.0129	.0065	-.0061
.081	.000	4.16	-.0194	.0152	.0523	.0157	.0063	-.0059
.081	.000	6.25	-.0286	.0113	.0503	.0172	.0056	-.0047
.081	.000	8.33	-.0229	.0105	.0246	.0142	.0048	-.0032
.081	.000	10.43	-.0330	.0051	.0099	.0101	.0029	.0024
.081	.000	12.49	-.0134	.0029	.0242	.0072	.0011	.0104
.081	.000	14.55	-.0319	-.0056	.0178	.0025	.0003	.0118
.081	.000	16.61	-.0132	-.0007	.0201	.0021	.0001	.0124
.081	.000	18.65	-.0224	-.0048	.0145	.0012	-.0004	.0149
.081	.000	20.67	-.0282	-.0063	.0255	-.0016	-.0008	.0203
.081	.000	23.70	-.0181	-.0063	.0096	.0016	-.0020	.0337
				M = .70				
.081	.000	- 2.11	.0018	.0158	.0251	.0104	.0071	-.0074
.081	.000	- .02	-.0202	.0162	.0216	.0122	.0065	-.0096
.081	.000	2.07	-.0283	.0155	.0231	.0151	.0065	-.0082
.081	.000	4.20	-.0324	.0140	.0311	.0175	.0063	-.0063
.081	.000	6.29	-.0403	.0115	.0320	.0183	.0052	-.0072
.081	.000	8.40	-.0212	.0113	.0216	.0140	.0046	-.0041
.081	.000	10.51	-.0233	.0023	.0171	.0103	.0021	.0019
.081	.000	12.57	-.0141	-.0002	.0196	.0058	.0004	.0106
.081	.000	14.63	-.0078	-.0022	.0027	.0021	.0005	.0102
.081	.000	16.70	-.0054	-.0008	.0090	.0029	-.0001	.0115
.081	.000	18.74	-.0014	-.0005	.0076	.0026	-.0005	.0136
.081	.000	20.74	-.0358	-.0098	.0252	.0120	-.0049	.0235
.081	.000	23.78	-.0186	-.0081	.0033	.0009	-.0011	.0360





(b) Concluded.

Table 17. Concluded.

δ_s	δ_d	α	ΔC_L	ΔC_D	ΔC_m	ΔC_l	ΔC_n	ΔC_Y
				M=.81				
.081	.000	-2.14	-.0138	.0141	.0290	.0126	.0071	-.0123
.081	.000	-.02	-.0290	.0141	.0249	.0143	.0066	-.0126
.081	.000	2.09	-.0372	.0131	.0293	.0170	.0065	-.0098
.081	.000	4.19	-.0728	.0086	.0324	.0194	.0062	-.0096
.081	.000	6.33	-.0477	.0089	.0327	.0195	.0052	-.0071
.081	.000	8.46	-.0229	.0083	.0180	.0128	.0025	-.0035
.081	.000	10.58	-.0054	.0013	.0602	.0065	.0008	.0035
.081	.000	12.64	-.0276	-.0044	.0174	.0028	.0002	.0052
.081	.000	14.73	-.0081	-.0028	.0160	.0030	-.0003	.0073
.081	.000	16.77	-.0096	-.0025	.0060	.0018	-.0001	.0102
.081	.000	18.82	-.0054	-.0009	.0131	.0019	-.0010	.0118
.081	.000	20.80	-.0160	-.0074	-.0028	.0002	-.0012	.0193
.081	.000	23.90	-.0074	-.0045	-.0019	.0011	-.0004	.0368
				M=.85				
.081	.000	-2.16	-.0144	.0138	.0279	.0134	.0072	-.0137
.081	.000	-.03	-.0257	.0142	.0278	.0148	.0068	-.0138
.081	.000	2.10	-.0498	.0132	.0337	-.0003	.0084	-.0122
.081	.000	4.24	-.0516	.0110	.0371	.0213	.0063	-.0099
.081	.000	6.37	-.0603	.0092	.0301	.0212	.0119	-.0064
.081	.000	8.48	-.0319	.0071	.0064	.0142	.0029	.0004
.081	.000	10.59	-.0073	.0003	.0097	.0057	.0006	.0044
.081	.000	12.68	-.0155	-.0038	.0167	.0037	.0003	.0052
.081	.000	14.74	-.0284	-.0090	.0185	.0020	.0001	.0074
.081	.000	16.83	.0047	.0057	.0145	.0089	-.0012	.0102
.081	.000	18.88	.0102	.0016	.0027	-.0004	-.0002	.0124
.081	.000	20.90	.0129	.0039	-.0060	.0014	-.0013	.0210
				M=.90				
.081	.000	-2.16	-.0170	.0146	.0297	.0156	.0078	-.0135
.081	.000	-.03	-.0350	.0153	.0318	.0167	.0072	-.0146
.081	.000	2.13	-.0509	.0138	.0415	.0196	.0079	.0258
.081	.000	4.26	-.0487	.0121	.0399	.0224	.0061	-.0099
.081	.000	6.38	-.0491	.0074	.0326	.0206	.0039	-.0037
.081	.000	8.51	-.0453	.0002	.0394	.0147	.0018	.0019
.081	.000	10.60	.0019	.0062	.0079	.0037	.0006	.0034
.081	.000	12.71	.0102	.0017	.0214	.0054	-.0004	.0051
.081	.000	14.76	-.0526	-.0134	.0274	.0069	.0002	.0085
				M=.94				
.081	.000	-2.15	-.0176	.0165	.0399	.0172	.0077	-.0145
.081	.000	-.02	-.0356	.0157	.0356	.0182	.0073	-.0154
.081	.000	2.12	-.0392	.0167	.0369	.0207	.0068	-.0125
.081	.000	4.25	-.0475	.0106	.0405	.0220	.0057	-.0088
.081	.000	6.36	-.0475	.0119	.0411	.0202	.0032	-.0036
.081	.000	8.46	-.0406	.0041	.0238	.0158	.0016	.0013
.081	.000	10.56	-.0357	-.0023	.0146	.0076	.0001	.0043

[redacted]

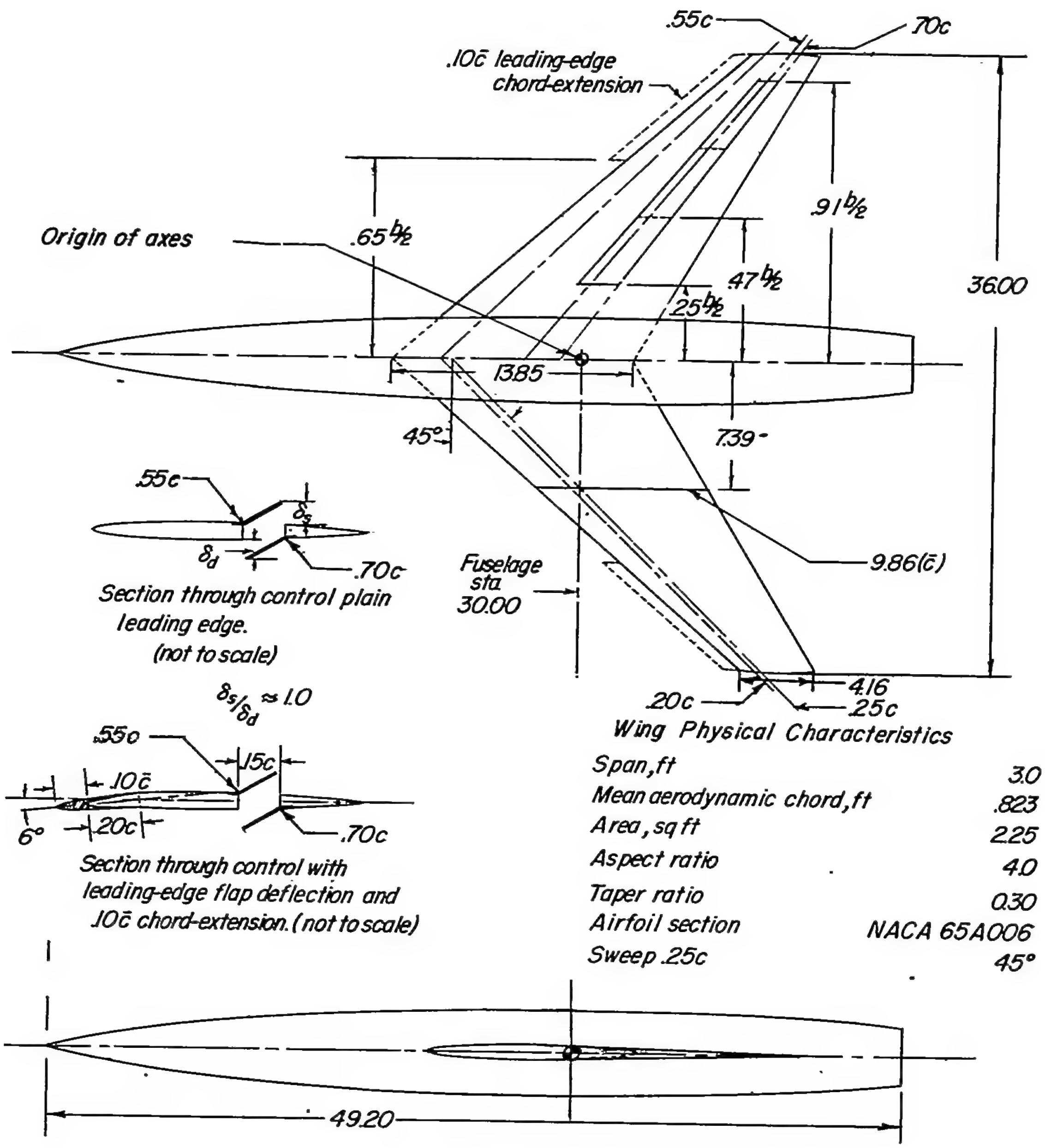


Figure 1.- General arrangement of model and controls.

L-74562

Figure 2.- Photograph of the model mounted in the Langley high-speed 7- by 10-foot tunnel.

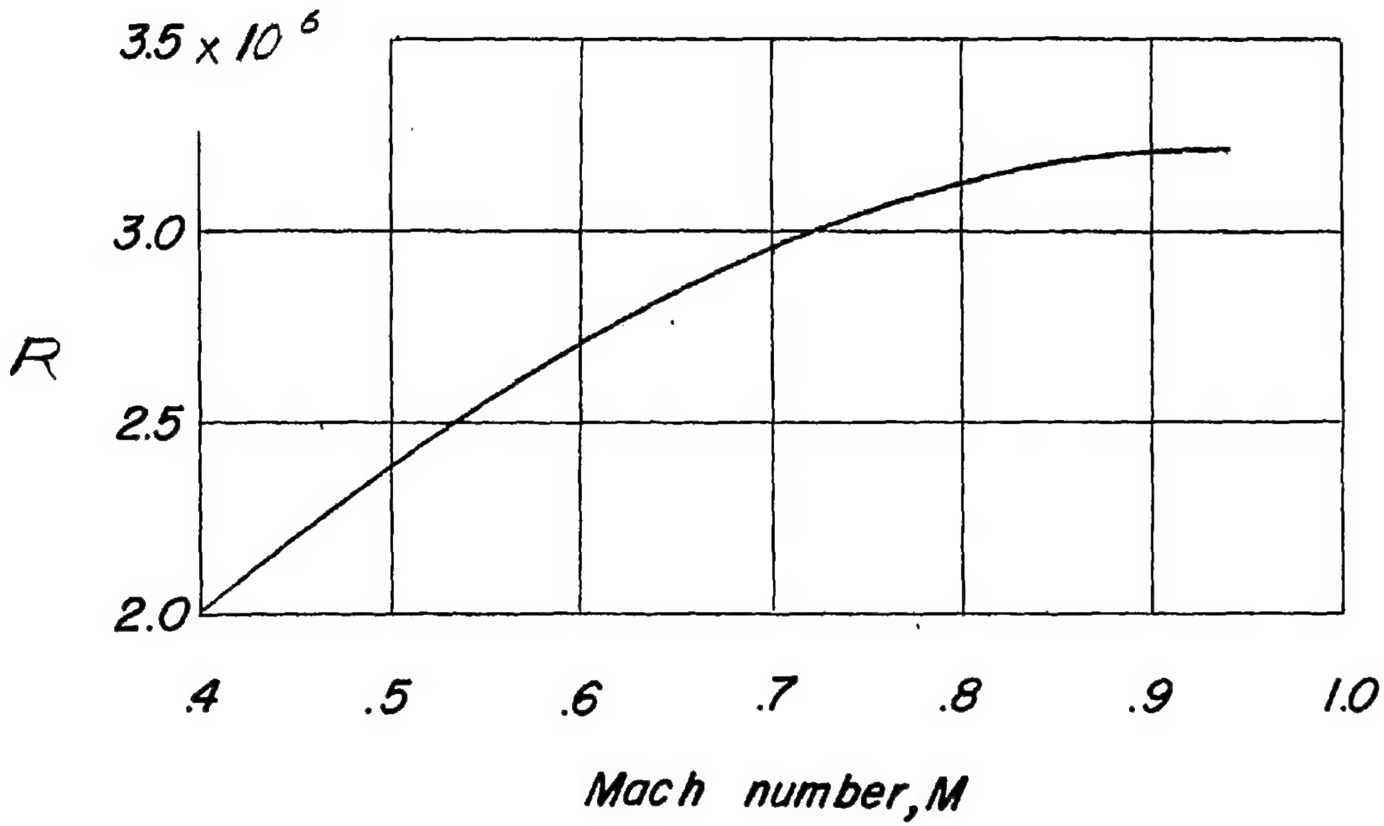


Figure 3.- Variation of average test Reynolds number with Mach number.

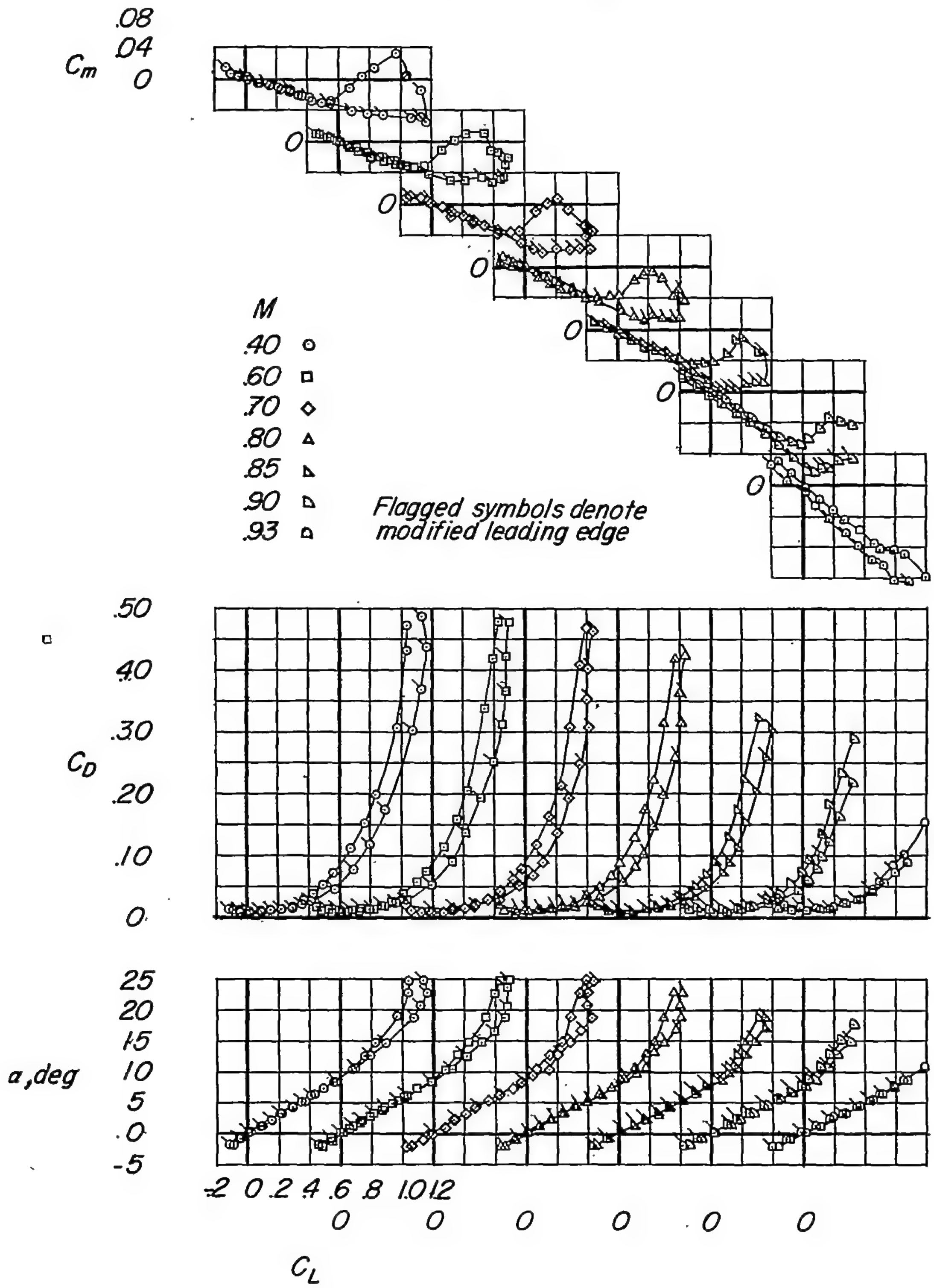


Figure 4.- Effect of wing leading-edge modification on the lift, drag, and pitching-moment characteristics of the model without controls. (Data taken from ref. 5.)

[redacted]

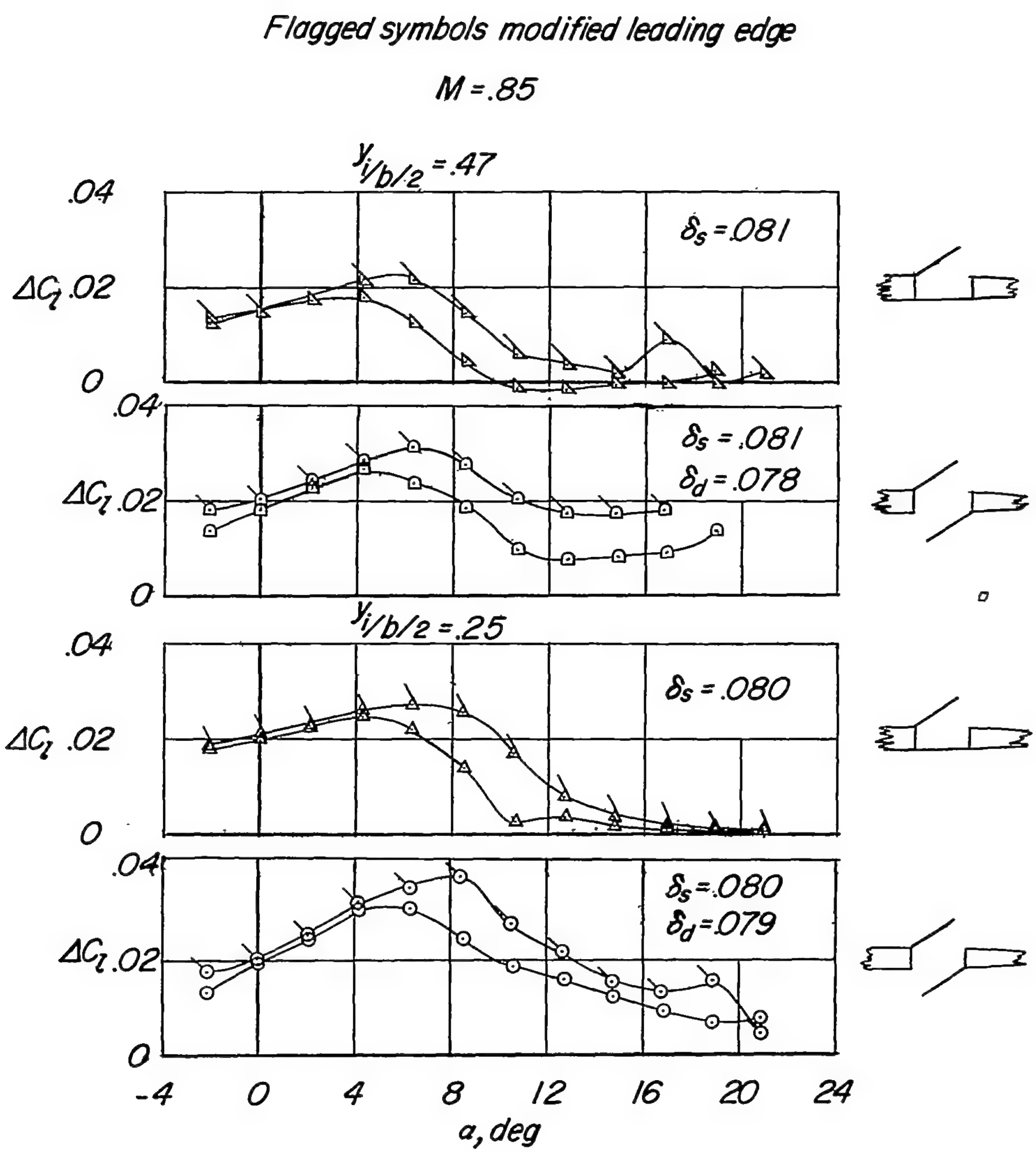
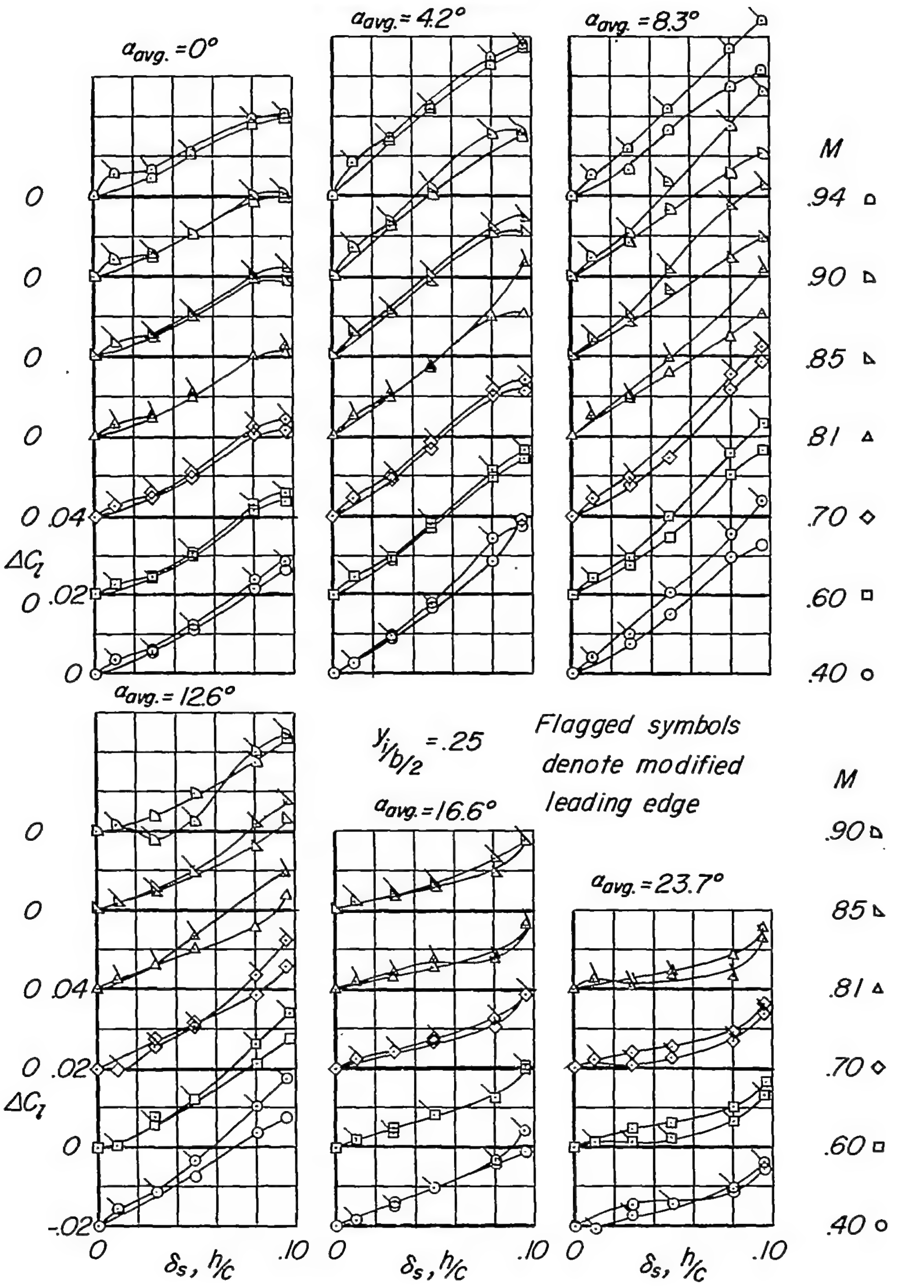


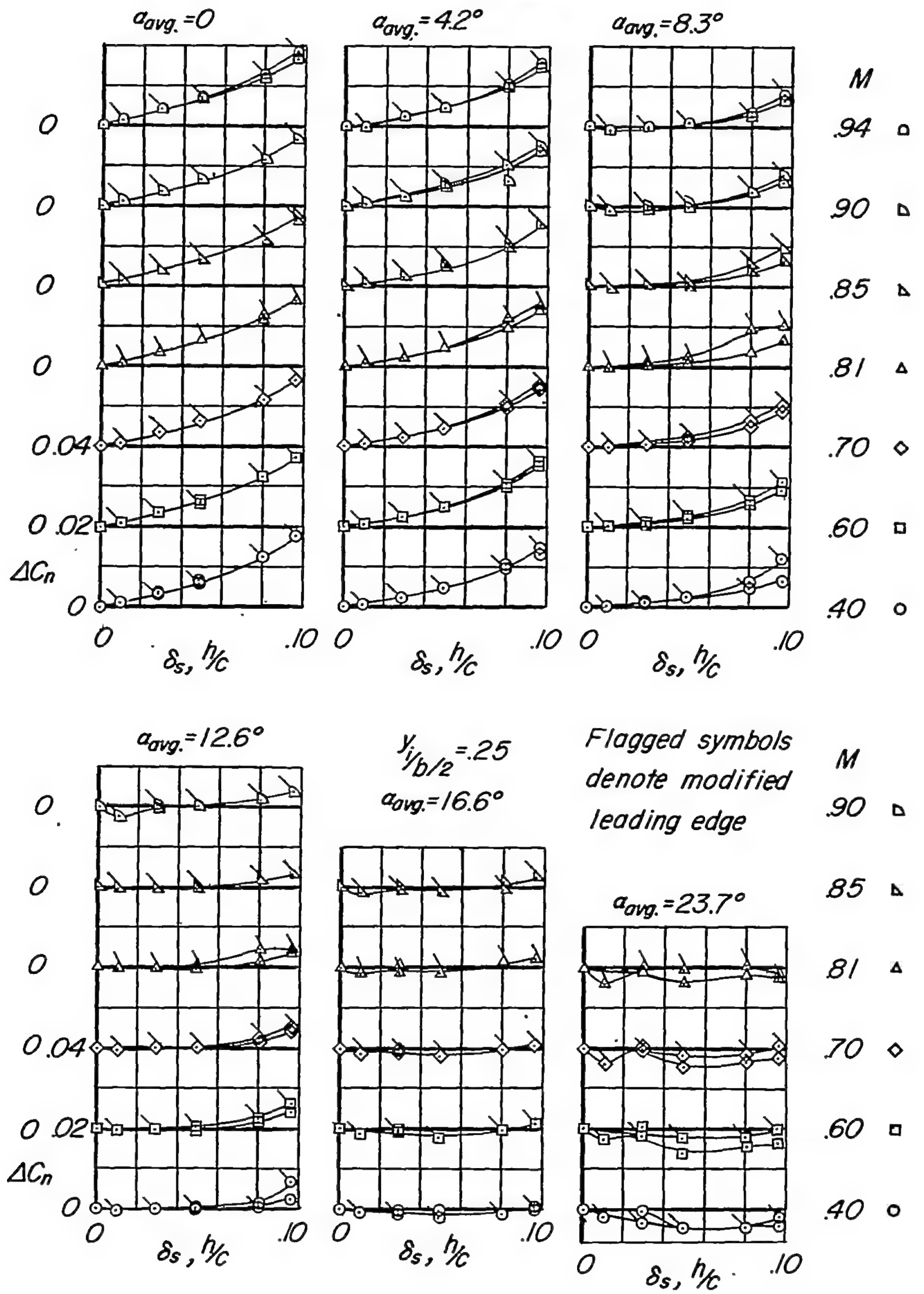
Figure 5.- Comparison of the static roll effectiveness of the spoiler-slot-deflector control with the plain flap-type spoiler. Control span, 0.44b/2.



(a) Rolling-moment coefficient.

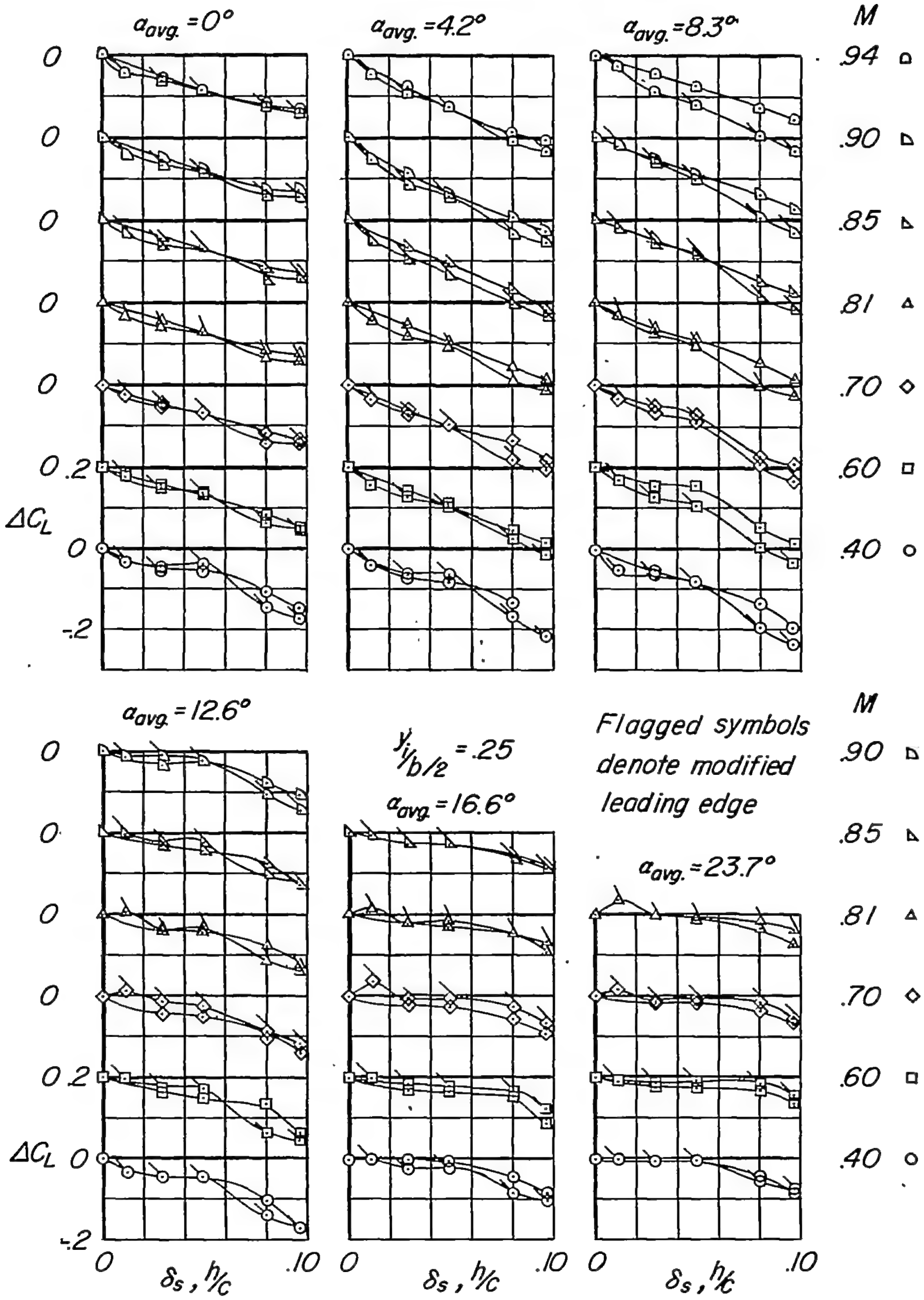
Figure 6.- Effect of wing leading-edge modification on the variation of incremental aerodynamic coefficients with inboard spoiler-slot-deflector projection.

[redacted]



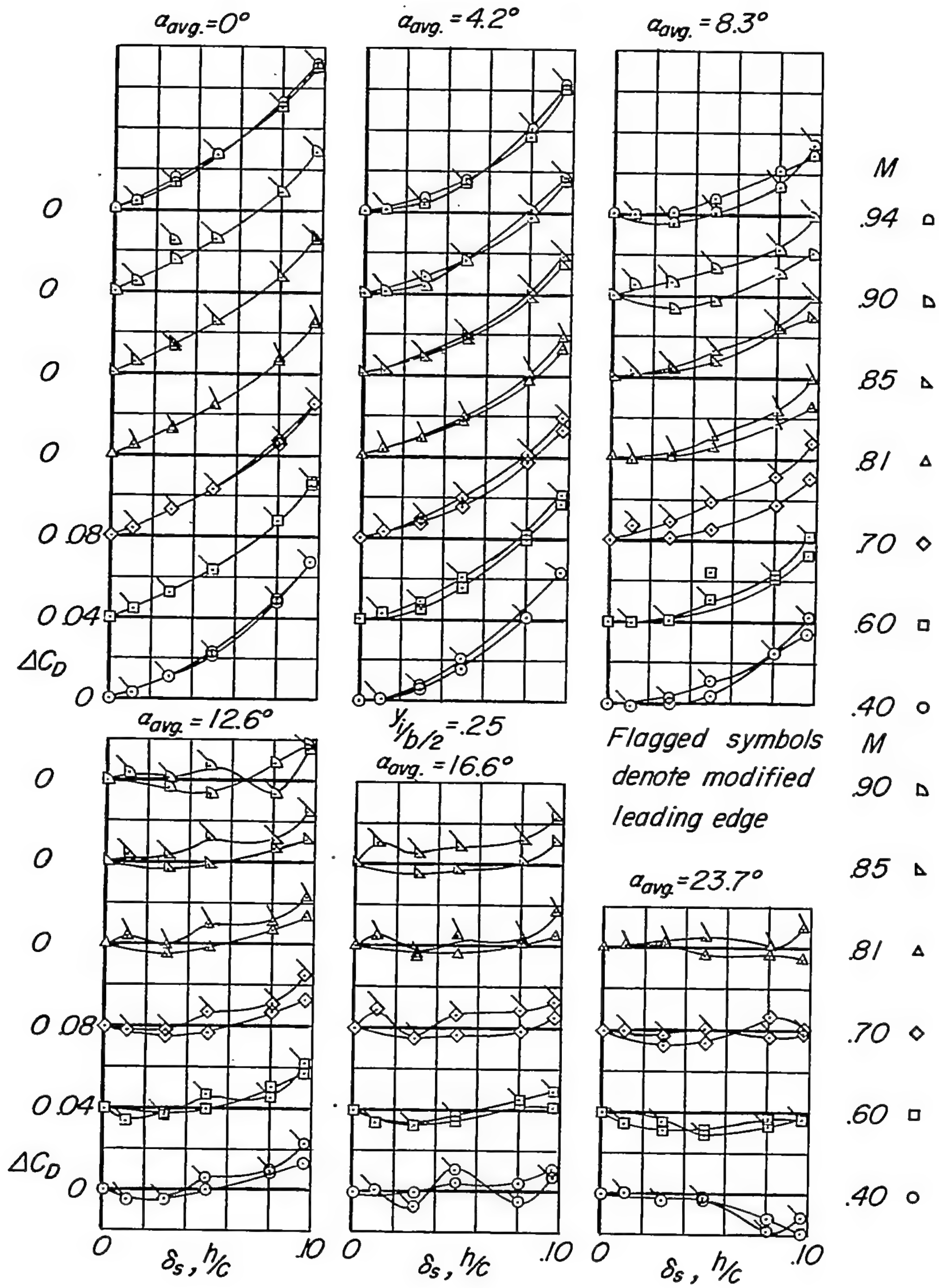
(b) Yawing-moment coefficient.

Figure 6.- Continued.



(c) Lift coefficient.

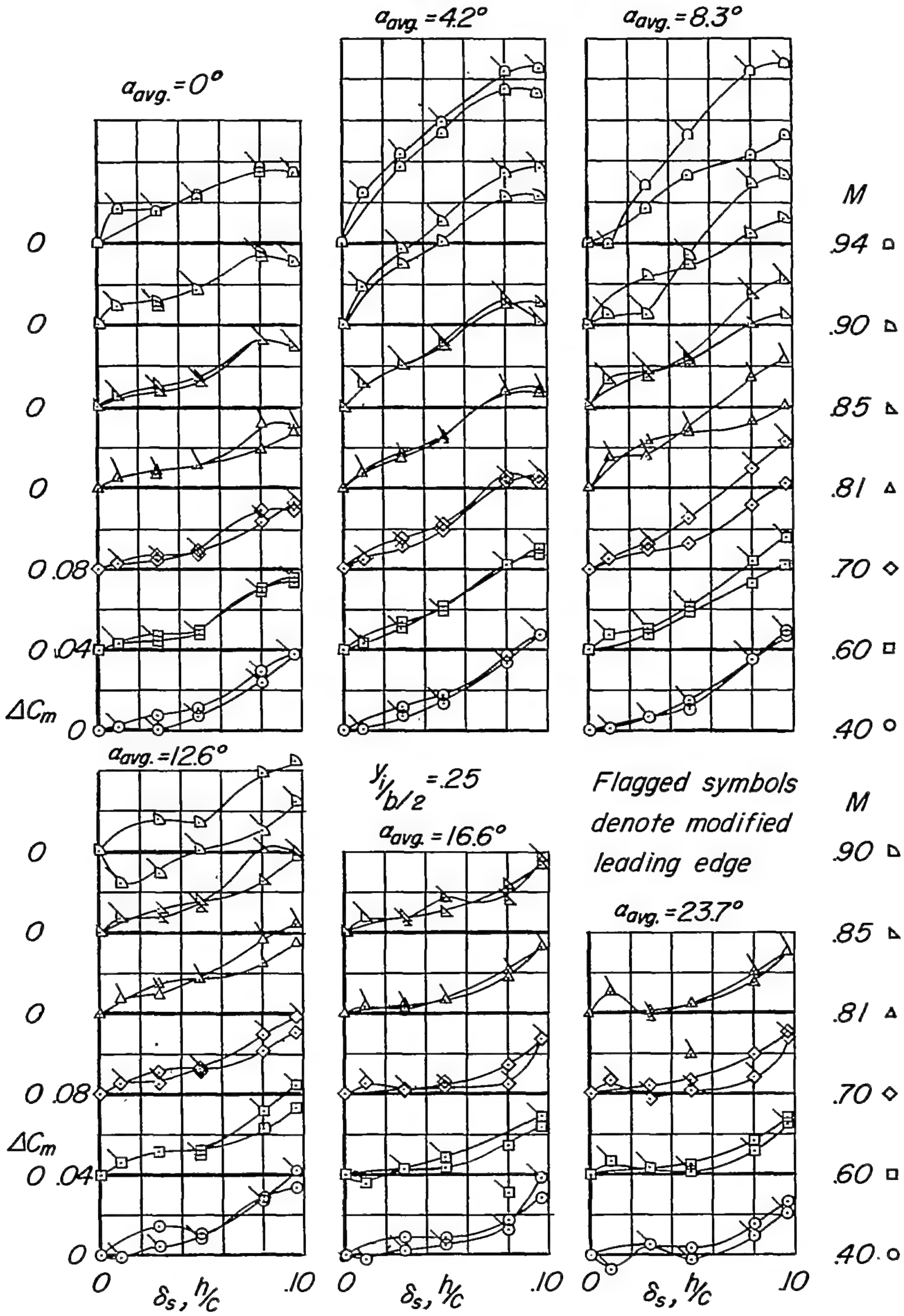
Figure 6.- Continued.



(d) Drag coefficient.

Figure 6.- Continued.

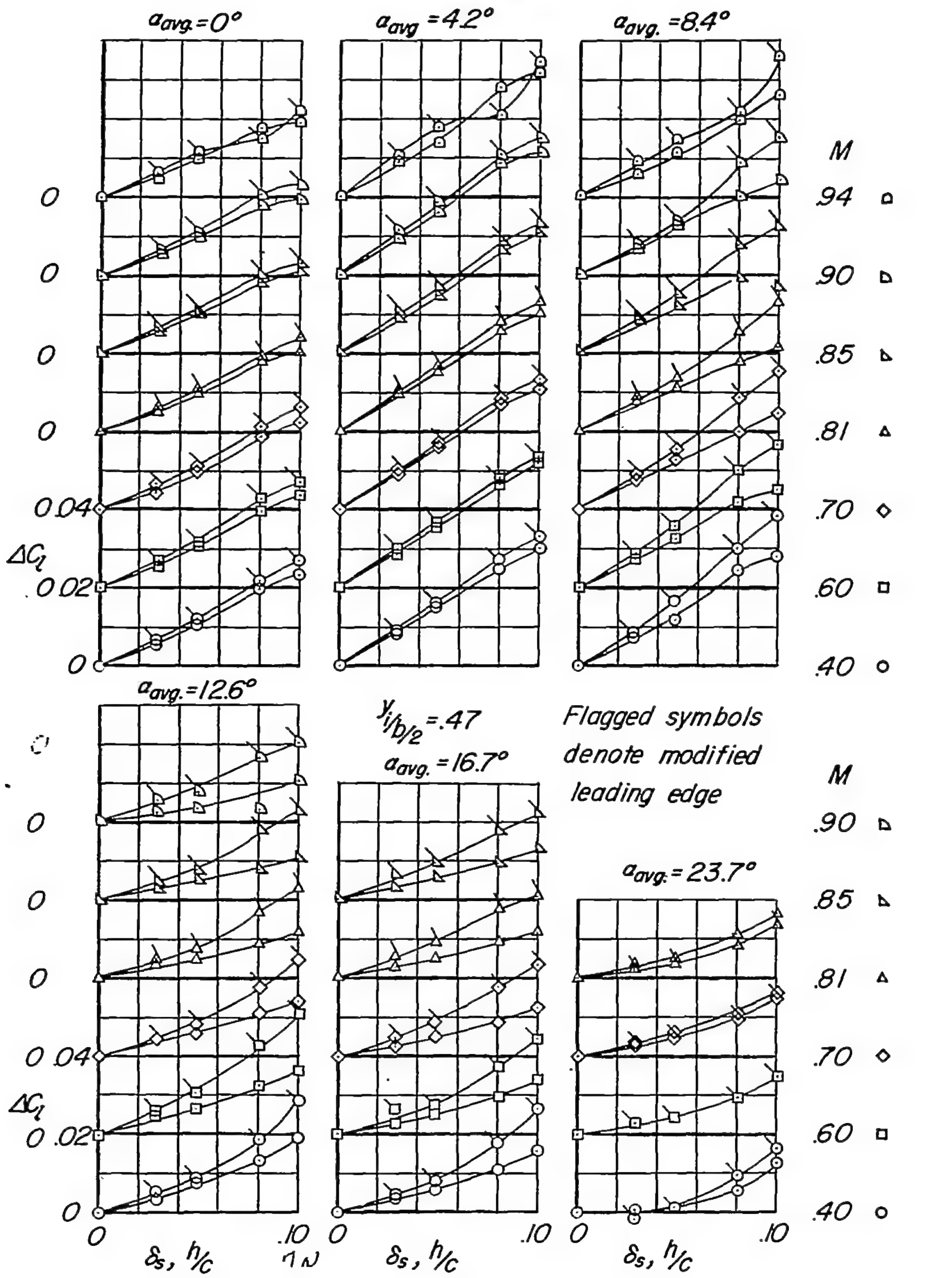
[redacted]



(e) Pitching-moment coefficient.

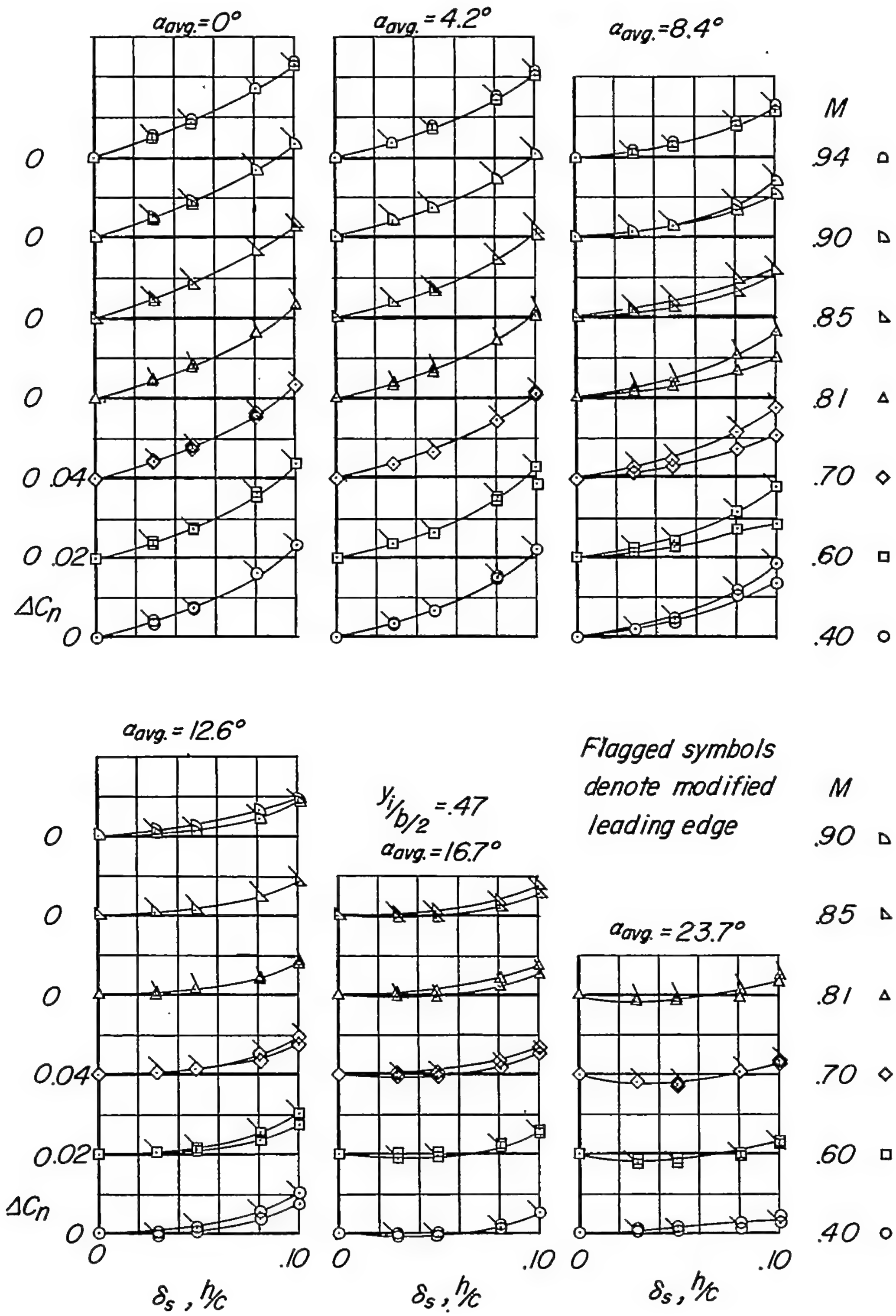
Figure 6.- Concluded.

[redacted]



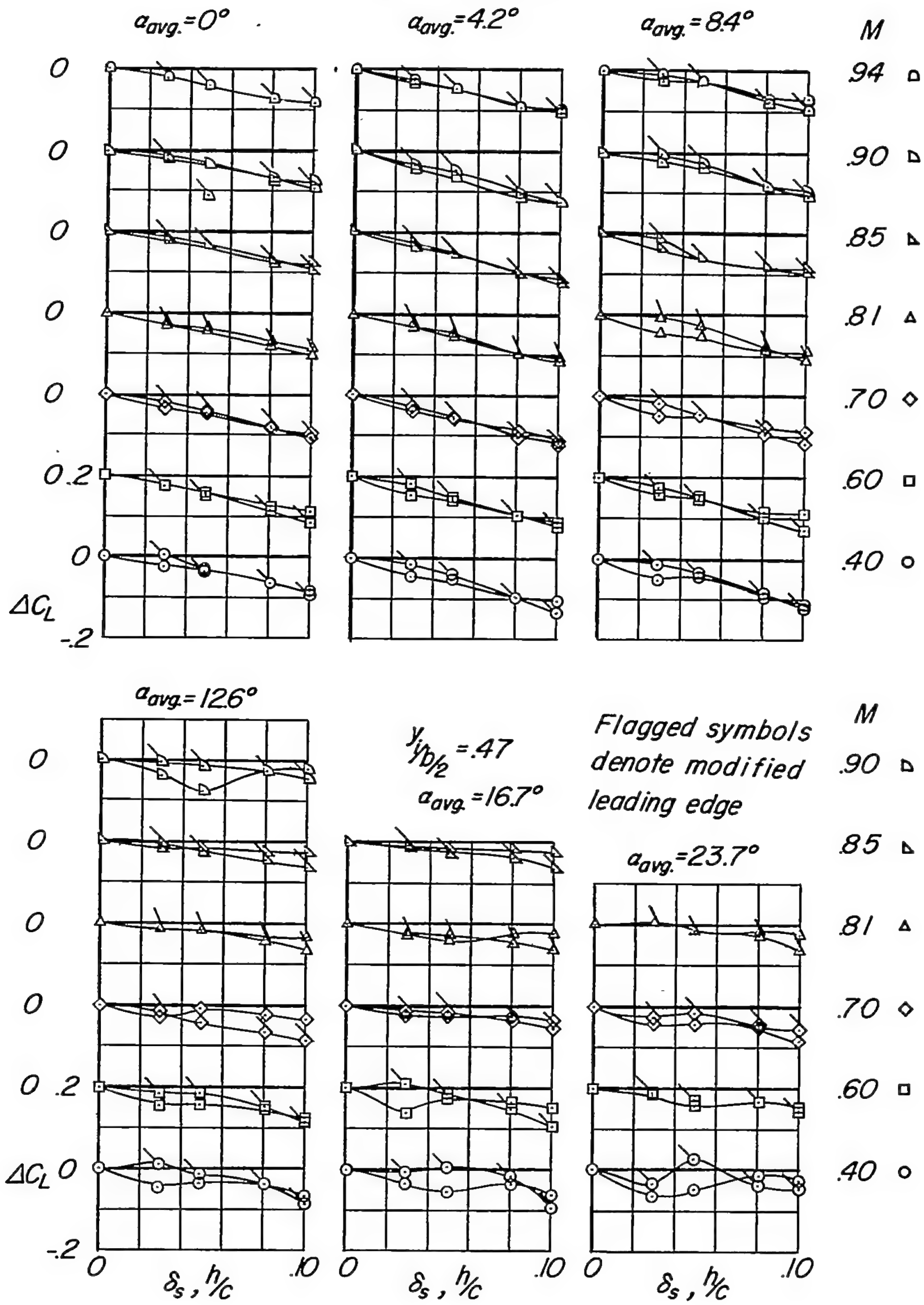
(a) Rolling-moment coefficient.

Figure 7.- Effect of wing leading-edge modification on the variation of incremental aerodynamic coefficients with outboard spoiler-slot-deflector projection.



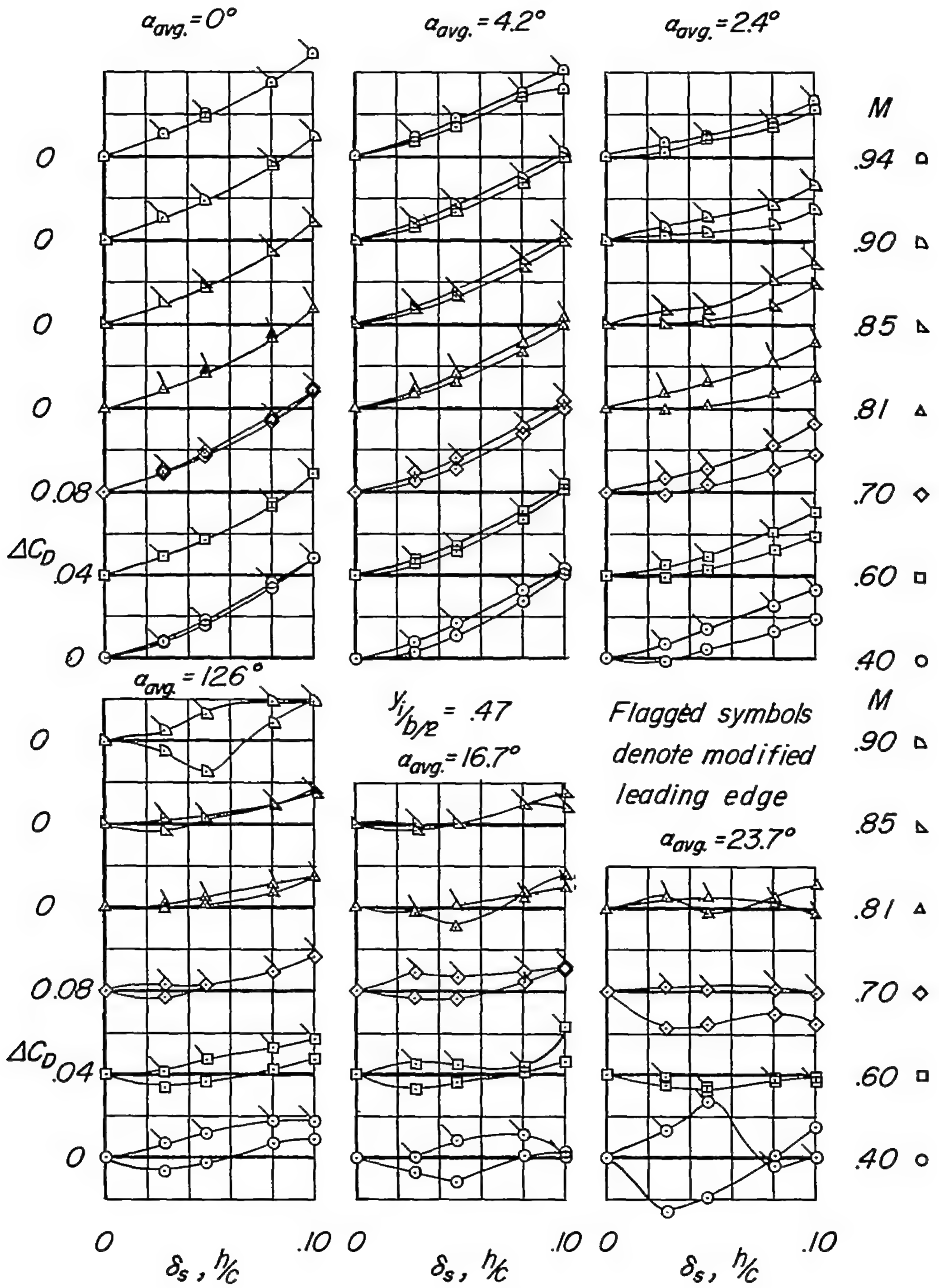
(b) Yawing-moment coefficient.

Figure 7.- Continued.



(c) Lift coefficient.

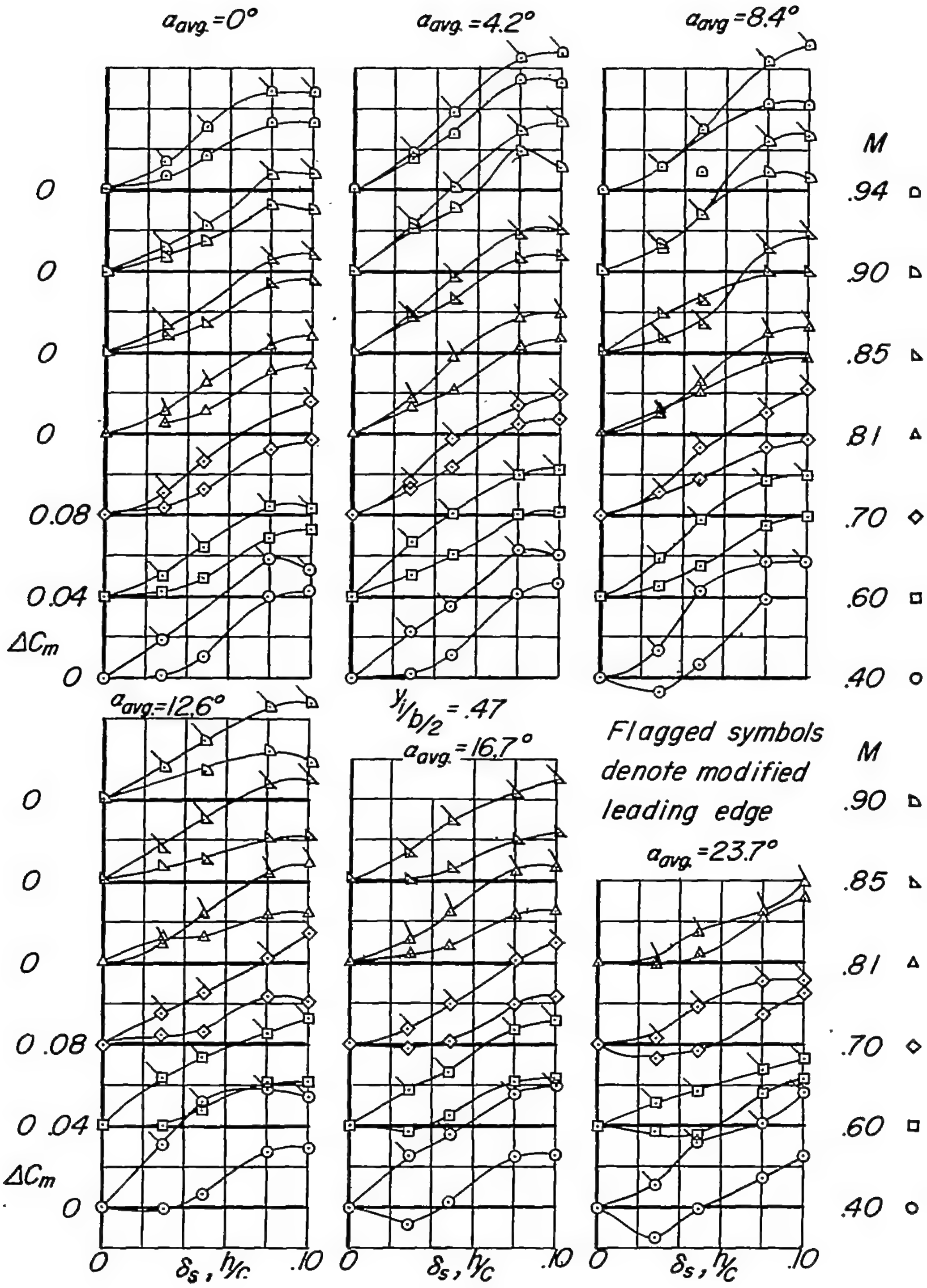
Figure 7.- Continued.



(d) Drag coefficient.

Figure 7.- Continued.

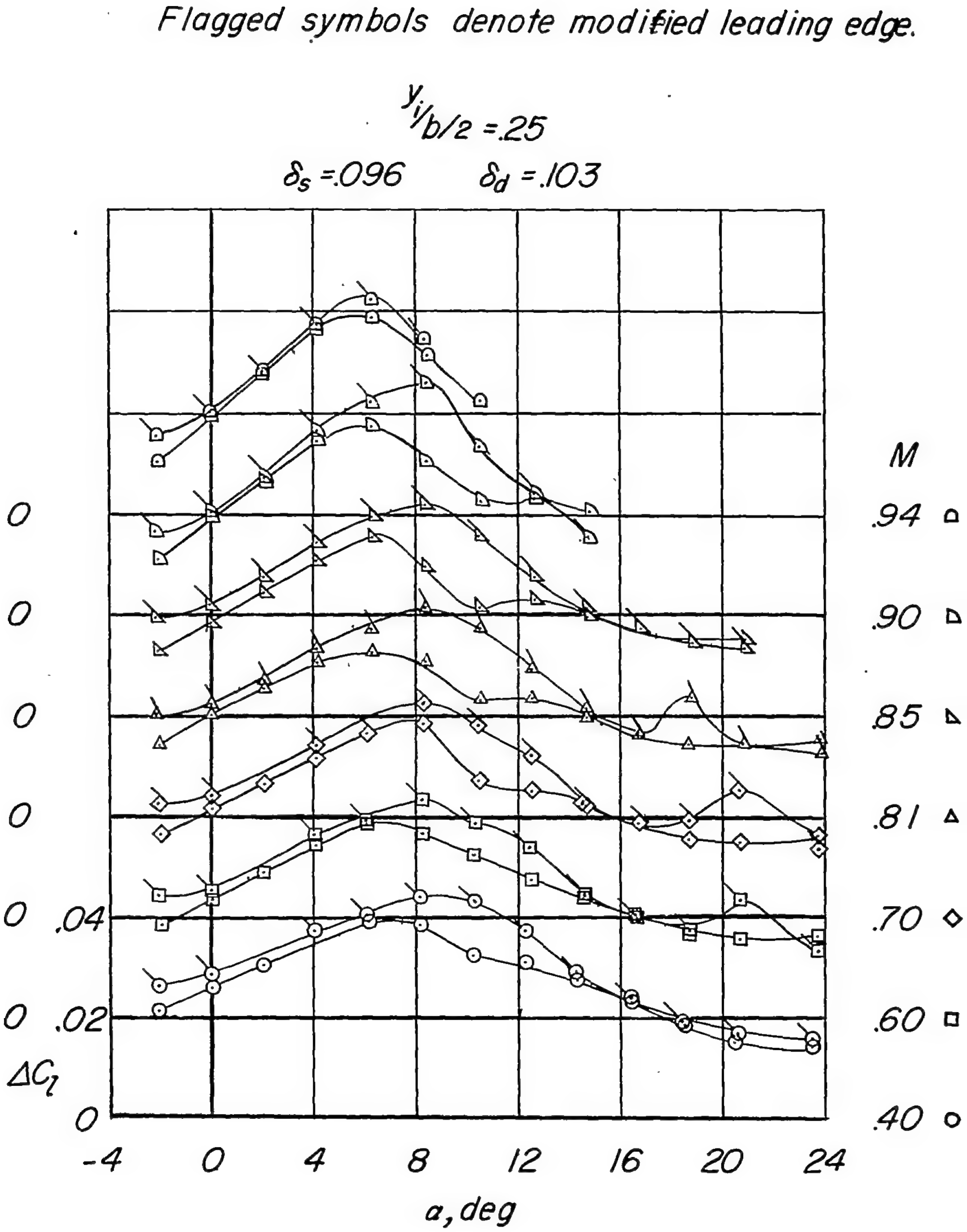
[redacted]



(e) Pitching-moment coefficient.

Figure 7.- Concluded.

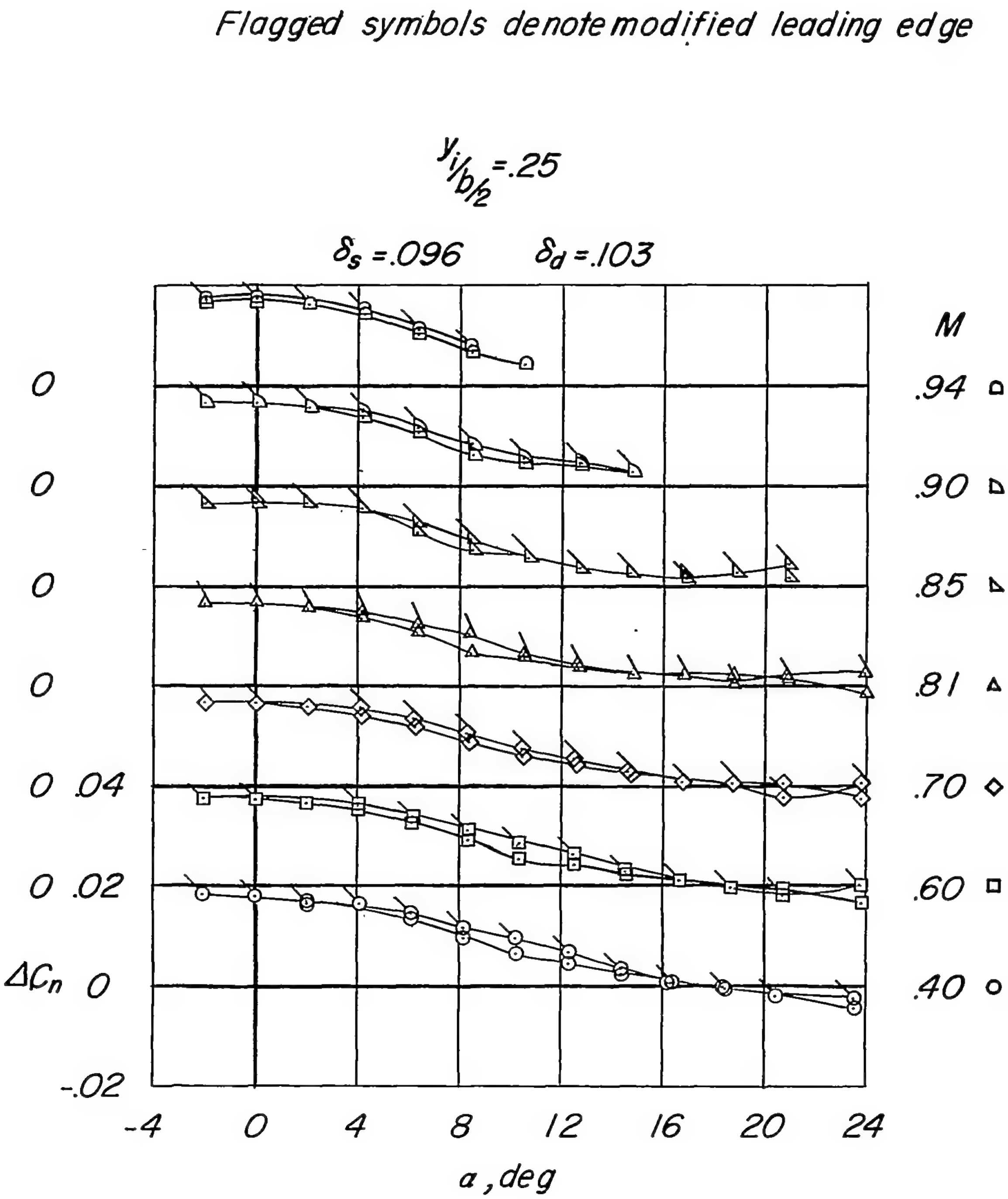
9Y



(a) Rolling-moment coefficient.

Figure 8.- Effect of wing leading-edge modification on the variation of incremental aerodynamic moment coefficients with angle of attack for the inboard spoiler-slot-deflector control.

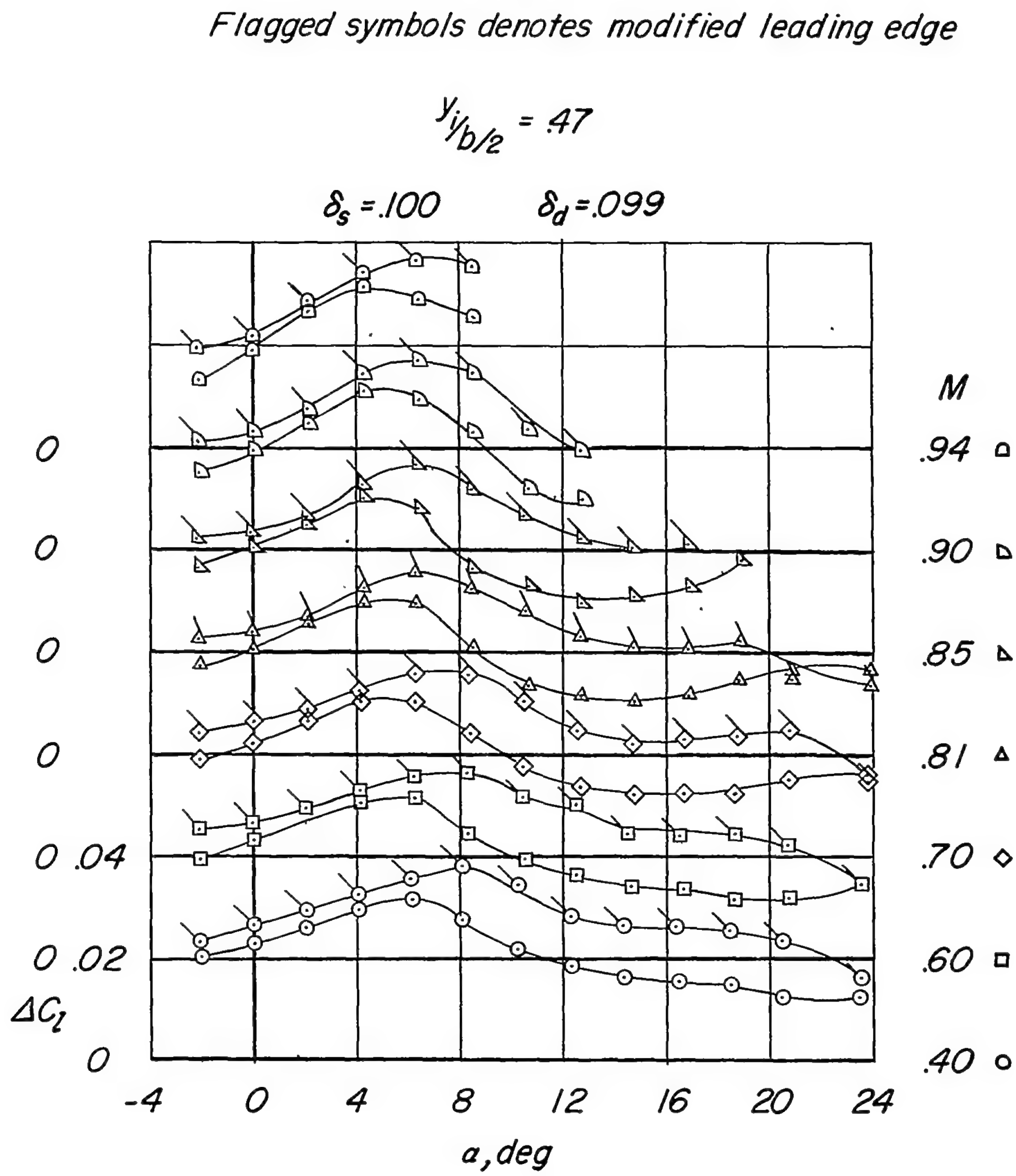
[redacted]



(b) Yawing-moment coefficient.

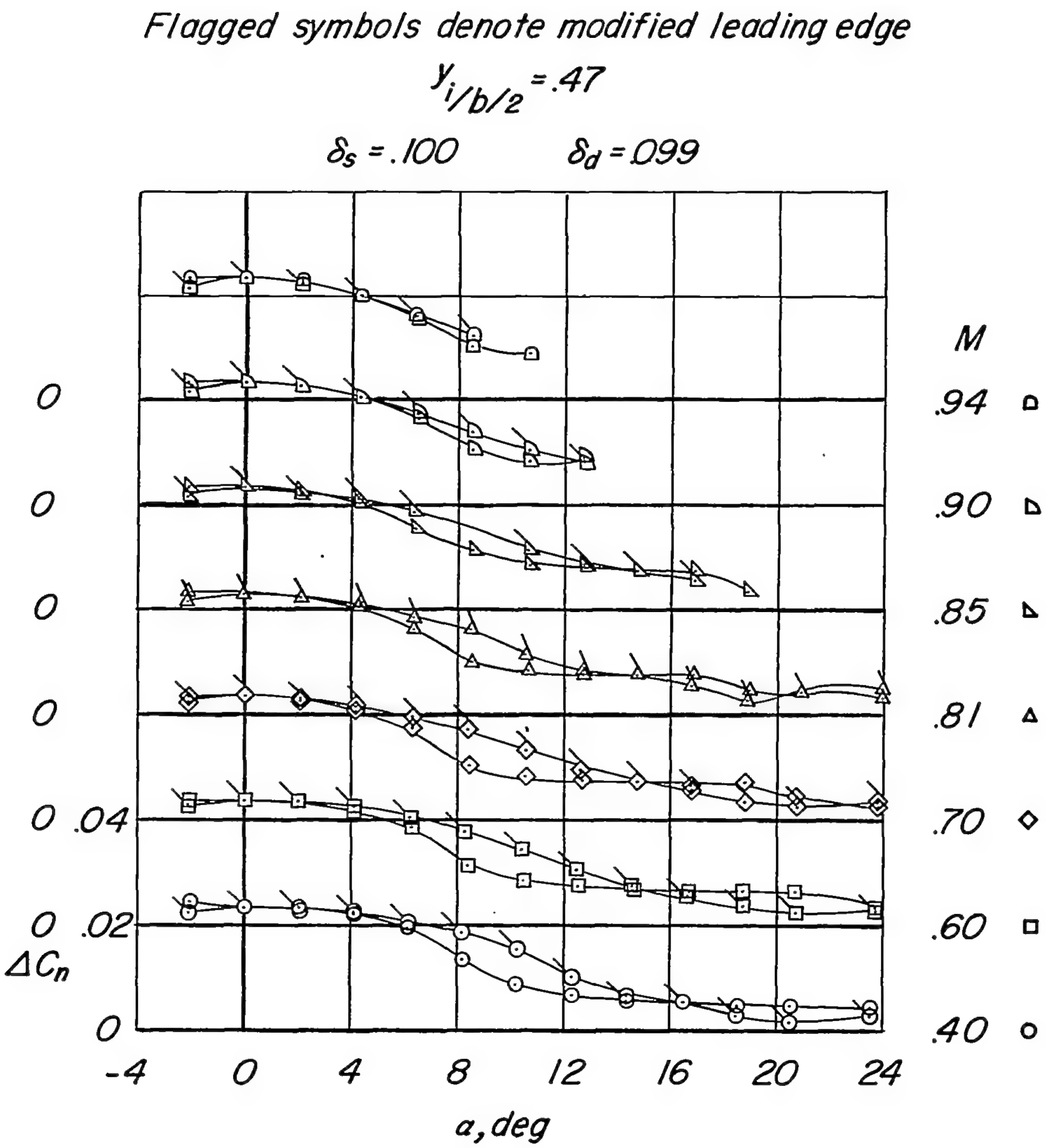
Figure 8.- Concluded.

[redacted]



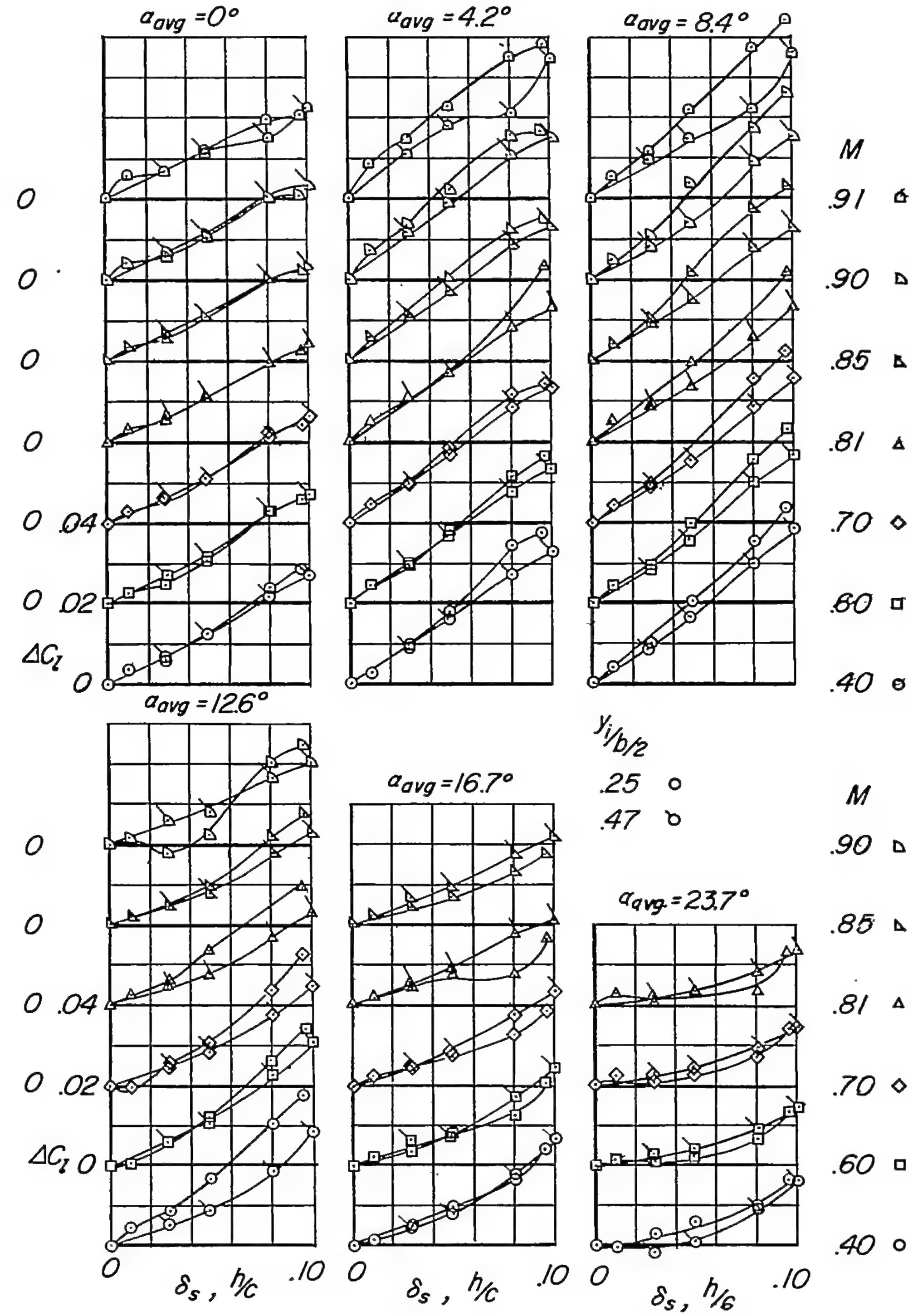
(a) Rolling-moment coefficient.

Figure 9.- Effect of wing leading-edge modification on the variation of incremental aerodynamic moment coefficients with angle of attack for the outboard spoiler-slot-deflector control.



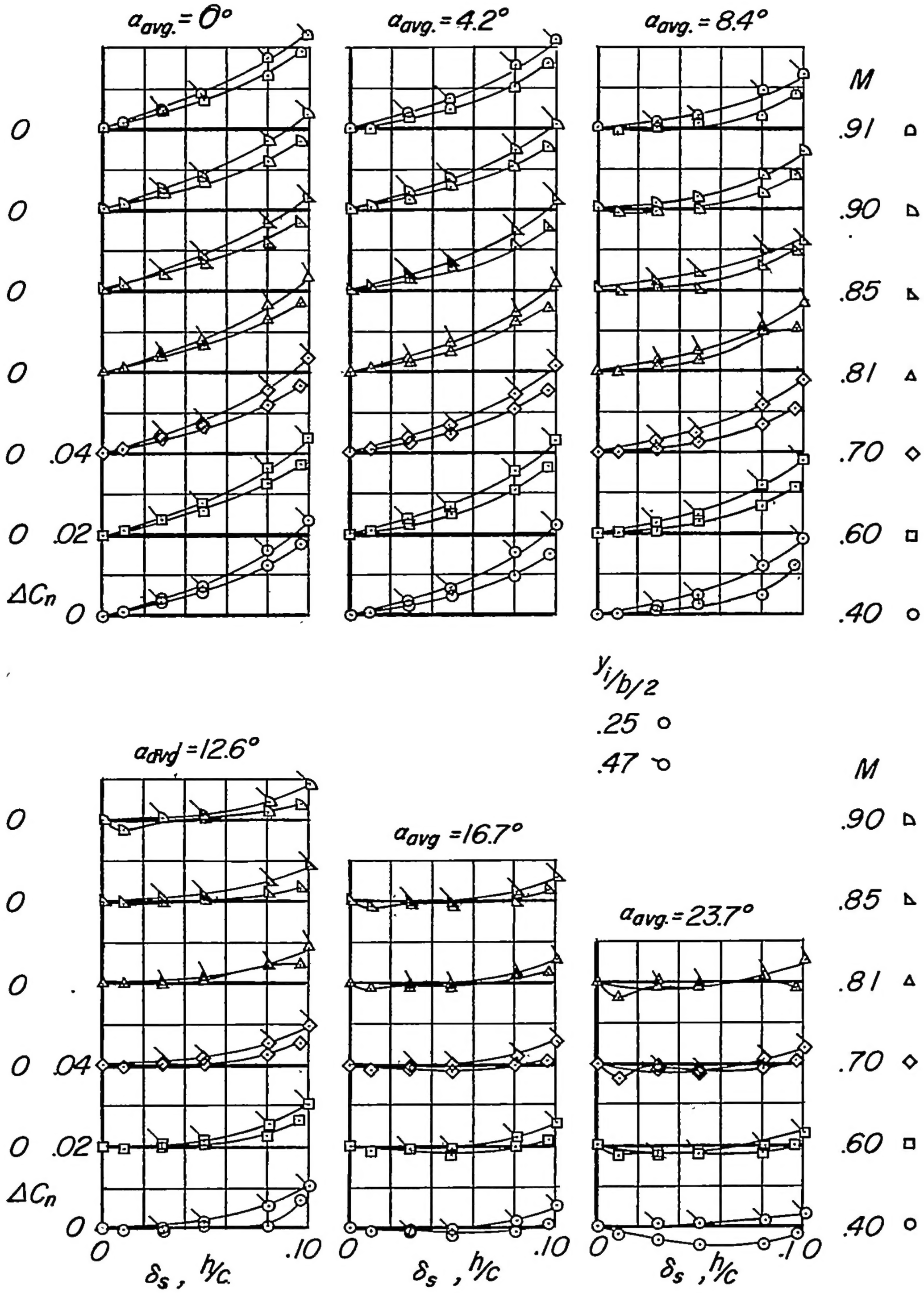
(b) Yawing-moment coefficient.

Figure 9.- Concluded.



(a) Rolling-moment coefficient.

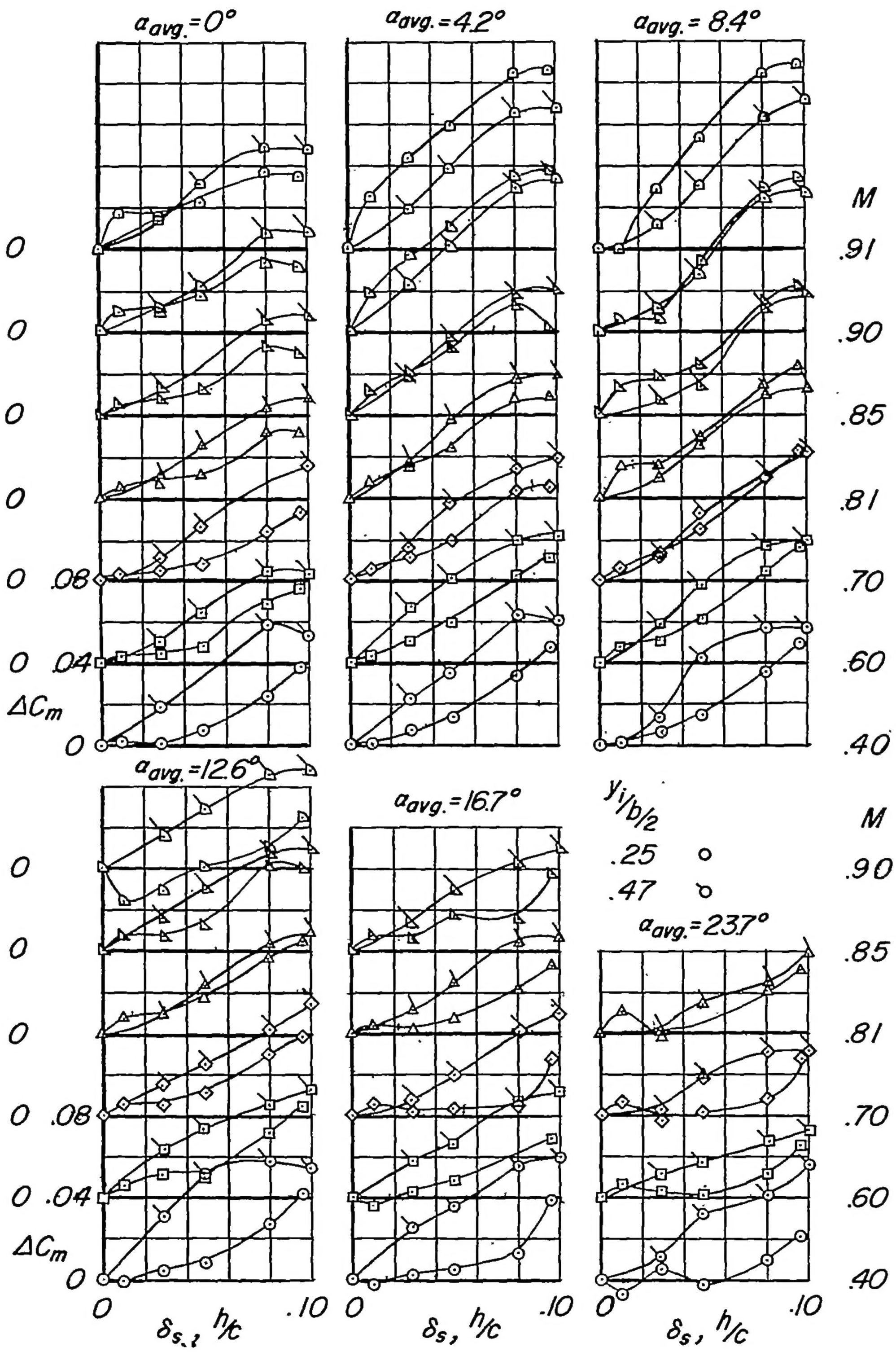
Figure 10.- Effect of control spanwise location on the variation of incremental aerodynamic moment coefficients with spoiler-slot-deflector projection on the wing with the modified leading edge.



(b) Yawing-moment coefficient.

Figure 10.- Continued.

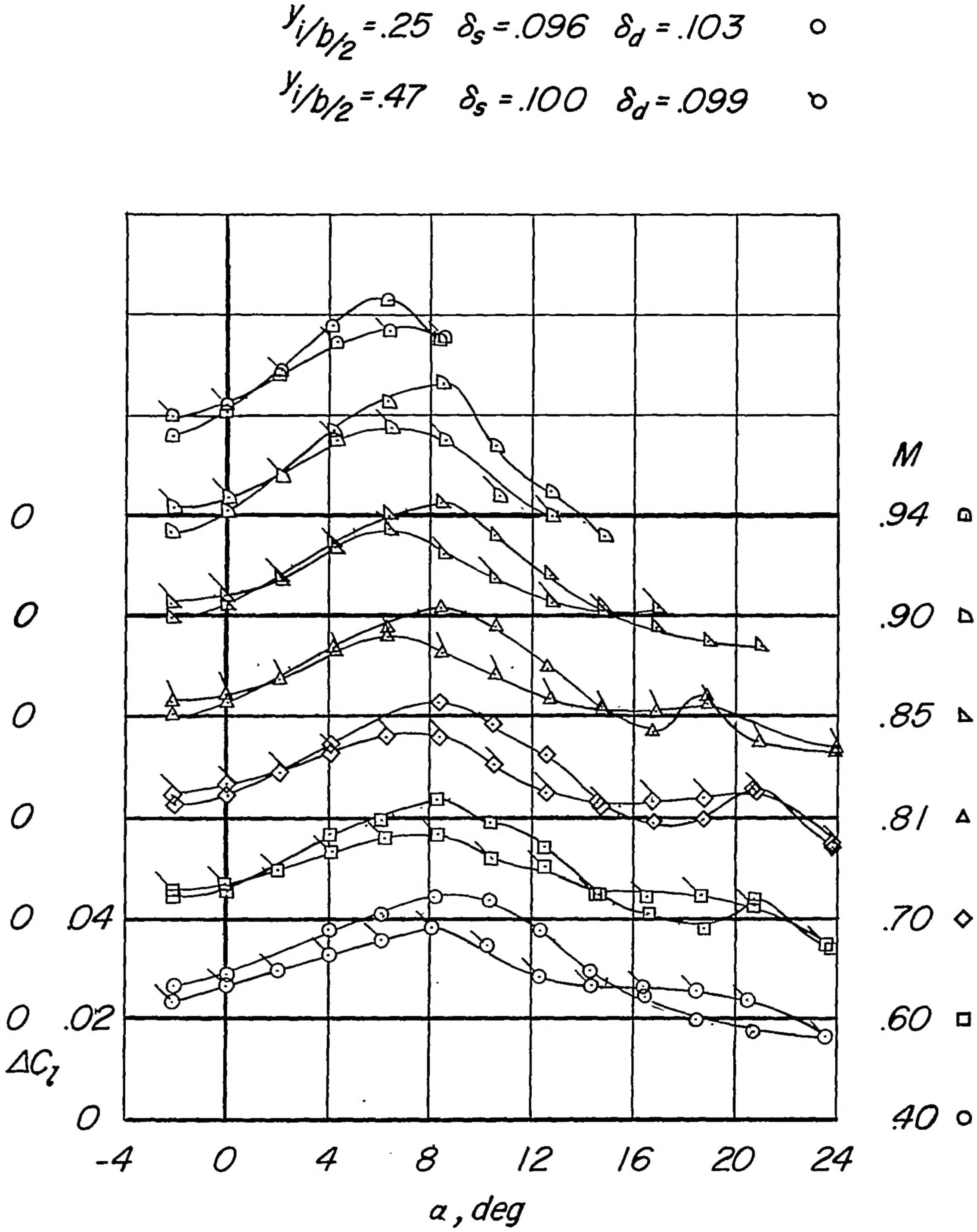
[redacted]



(c) Pitching-moment coefficient.

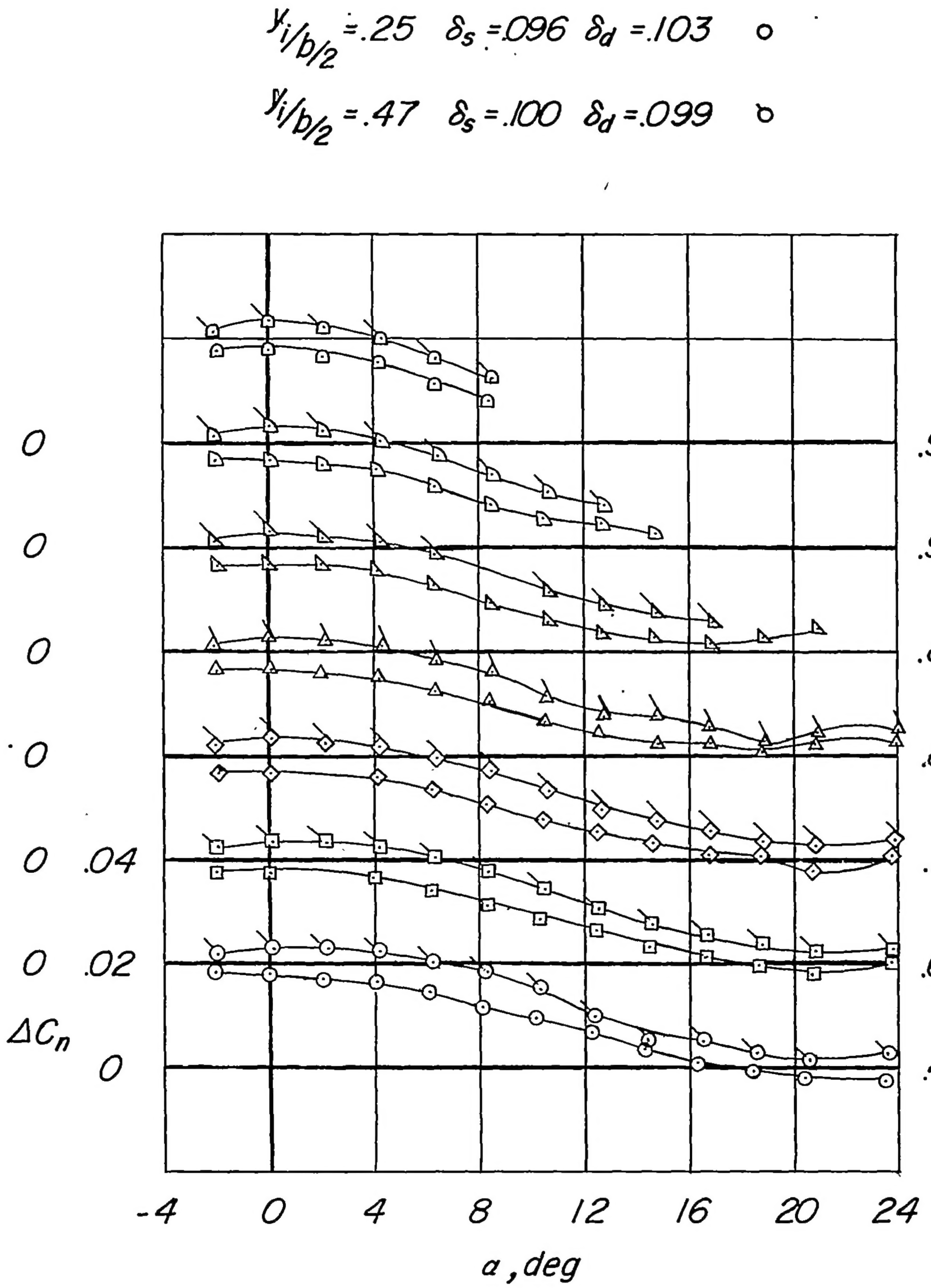
Figure 10.- Concluded.

[redacted]



(a) Rolling-moment coefficient.

Figure 11.- Effect of control spanwise location on the variation of incremental aerodynamic moment coefficients with angle of attack on the wing with the modified leading edge.



(b) Yawing-moment coefficient.

Figure 11.- Concluded.